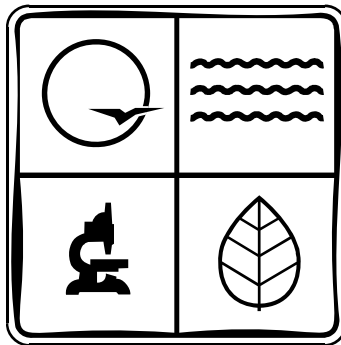


MISSOURI  
WATER QUALITY REPORT  
(SECTION 305(b) REPORT)

2006

MISSOURI DEPARTMENT OF NATURAL RESOURCES



**WATER PROTECTION PROGRAM**

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## CHAPTER 1. EXECUTIVE SUMMARY

The Missouri Water Quality Report is published every two years. The report summarizes water quality issues and judges the degree of progress Missouri has made toward meeting Federal Clean Water Act goals. The water quality assessments made in this report will help direct future water quality management efforts to those waters most in need of restoration or protection.

### WATER RESOURCES AND PROBLEMS

Missouri has an area of 69,000 square miles and a population of 5.6 million people, according to the 2000 census. About half of the population is concentrated on opposite sides of the state in the Kansas City and St. Louis metro areas, leaving most of the state and its waters rural in nature. Surface and groundwater in Missouri are quite varied in quantity and quality, corresponding closely with geology and land use.

#### Northern and Western Missouri

Northern and western Missouri, originally prairie land, are now used primarily for crop and livestock production and are underlain by bedrock containing several relatively impermeable shale and clay layers. Surface waters are more turbid and are greatly affected by high rates of sediment deposition. These deposits, caused by soil erosion, result in poor aquatic habitat due to the fine, unstable materials of stream bottoms. Up to 8,000 miles of classified streams may be affected by these processes or other types of degradation of aquatic habitat, such as flow modification or channelization.

Rivers and reservoirs used as drinking water supplies often contain herbicides. In the recent past, several reservoirs that served as public drinking reservoirs exceeded drinking water standards for atrazine or health advisory levels for cyanazine. Currently, however, there are no actively used drinking water reservoirs for which atrazine or cyanazine exceed these levels. This is due in part to local watershed management programs aimed at reducing herbicide runoff. Several other herbicides are occasionally found in drinking water reservoirs, also at concentrations below health advisory levels.

The quality of groundwater in northern and western Missouri is also influenced by the geology of the area. Public water supply sources include reservoirs and wells. The wells obtain water from glacial drift deposits primarily in portions of north-central and western Missouri. Wells in western Missouri, south of Kansas City, obtain water from limestone aquifers except for the extreme western limits of Missouri near the state border with Kansas. Private water supplies are obtained from glacial drift deposits and from underlying limestone bedrock in portions of northwestern, central, eastern and northeastern Missouri. However, deep bedrock wells in many north-central and northwestern Missouri locations tap water supplies too mineralized for drinking water purposes. About one-quarter of private wells in this portion of Missouri exceed the drinking water standard for nitrate and about two percent exceed drinking water standards for pesticides. This contamination is often caused by localized surface contamination of the wellhead and does not represent widespread contamination of the underground aquifer. Deeper aquifers are well protected from surface contamination by impermeable strata.

#### The Ozark Plateau

The Ozark Plateau, including the Springfield Plateau, is predominantly hilly topography. There are some very rugged portions as well as significant areas of gentle to almost flat landscape. The bedrock, consisting of limestone, dolomite and sandstone, yields groundwater of excellent quality generally requiring no treatment and adequate in supply for most urban, industrial and other needs. The soil or subsoil has developed by weathering from the bedrock formations and is generally 20 to 80 feet thick.

Some areas have extremely thin soils and other locations where weathering has been extensive have a thickness of 100 feet and more. The subsoil has moderate to high infiltration rates, which contribute to the recharge of groundwater supplies. Ozark streams are generally clear with baseflows well sustained by many seeps and springs. Some streams and reservoirs in the Ozarks are becoming nutrient and algae enriched due to increasing human population and domestic animal production in their watersheds.

Groundwater contamination risks are moderate to high due to the permeability of the soil and bedrock. Any number of surface activities, including agricultural and suburban-urban storm water and wastewater disposal, mining, storm water runoff, lawn care, improper well construction or closure, and individual on-site wastewater disposal practices, pose threats to surface water and groundwater quality. However, overall water quality remains good in large part due to the efforts of all parties to protect the aquifers.

Groundwater is relied upon heavily for drinking water supply in this part of Missouri. Most municipalities in the southern half of the state rely on groundwater for drinking water supply. The number of private drinking water wells statewide is not known, but is probably between 100,000 and 250,000, mostly south of the Missouri River. The major groundwater concern is the often rapid and unfiltered transmission of contaminated surface runoff or leachate from some septic tanks, underground storage tanks, landfills, dumps, and liquid waste storage ponds, and animal production or processing wastes through fractures or sinkholes directly into potable aquifers. Properly cased wells into deep aquifers rarely encounter water quality problems, but shallow or improperly cased wells are at risk.

In the Joplin area, the shallow bedrock aquifer has elevated levels of sulfate and several heavy metals due to mineralization of groundwater in flooded mines. Some private wells in this area exceed drinking water standards for lead or cadmium. Localized contamination of shallow private wells due to leaks, spills and improper disposal of industrial or commercial chemicals occurs in the larger metro areas of Springfield and Joplin.

#### The Mississippi Embayment

Missouri's southeastern corner is a large alluvial plain of the Mississippi River. Originally a vast system of wetlands, it has been drained and almost entirely converted to crop production. Almost all surface waters in the area are drainage ditches and may not attain beneficial uses because of degradation of aquatic habitat due to channelization. Channelization creates a homogenous, low quality aquatic habitat. Sloughing of the channel banks, which fills the channel bottoms, buries better habitat and leaves unstable substrate, is a problem.

Groundwater is abundant due to high infiltration rates on these flat fields. Public water supplies that tap deeper aquifers provide good quality water, but shallow private wells commonly have nitrates and low levels of pesticides. The frequency of exceedence of drinking water standards for nitrates and pesticides in private wells is similar to northern Missouri, about 18 percent and two percent, respectively.

#### Alluvial Aquifers

The remaining major aquifer is the alluvial aquifer system of the major rivers of the state. In northern Missouri, where surface and deep aquifer supplies are unreliable, many towns depend on the alluvial aquifer of a large nearby stream. Landfills and industrial land use in Kansas City and St. Louis have historically been located on river floodplains and have caused local contamination of the Mississippi, Missouri and Meramec river aquifers in St. Louis and the Missouri River aquifer in Kansas City. Some municipal water supplies have been affected.

### **WATER POLLUTION CONTROL ACTIVITIES**

Authority for enforcement of the Missouri Clean Water Law and for state regulations concerning water pollution resides with the Department of Natural Resources' Water Protection Program. Authority for the regulation of pesticides rests with the Missouri Department of Agriculture.

#### Point Source Controls

The number of miles of classified streams judged to be impaired by point source wastewater discharges is similar to the estimate from 1984, when statewide data on stream quality first became available. In 1984, 105 miles of classified stream were judged to be impaired by domestic or industrial wastewater. Domestic and industrial discharges include wastewater from cities, subdivisions, apartment complexes, mobile home parks, businesses and industries. Stream miles impaired by point source discharges in more recent years were 91 miles in 1998, 93 miles in 2000, 104 miles in 2002, 101 miles in 2004, and 83 miles in 2006. The decrease in impaired mileage during the

current reporting cycle may be due in part to evolving data requirements and analytical methods, as prescribed by Missouri's 303(d) Listing Methodology.

Hog and poultry production in concentrated animal feeding operations (CAFOs) are now major industries in Missouri. The large amount of animal waste generated at these facilities requires proper management to prevent water pollution. CAFOs are incorporated into the point source permit program, consistent with federal requirements.

Concern over eutrophication of large, recreationally important reservoirs led to changes in the state regulations for discharges of wastewater. These regulations impose phosphorus concentration limits on most wastewater discharges in the Table Rock Reservoir and Lake Taneycomo watersheds.

### Nonpoint Source Controls

In recent years, several different types of nonpoint sources of pollution have come under regulatory control through a permitting process. Regulations are in place to prevent leakage from underground storage tanks and for the secondary containment of bulk agricultural chemical storage sites. Large sand and gravel mining operations require a general permit for storm water and smaller operations have been provided with guidelines for best management practices (BMPs), in addition to the 404 permit required of all sand and gravel operations. Storm water runoff discharge permits are issued for construction sites and other areas with more than one acre of bared ground. About 50 percent of all permits now issued by the Water Pollution Control Branch are storm water permits on land disturbance activities. Active mining areas that discharge water must operate under permits, although many abandoned mine lands still rely on voluntary controls. Many cities and large towns must now obtain storm water permits in order to manage pollution due to urban runoff.

Control of many agricultural nonpoint sources, such as erosion from cropland and pasture, or runoff of fertilizer, pesticides and animal waste, are addressed by Missouri's voluntary nonpoint source management program. This program works with federal, state and local governments, universities, private groups, and individual landowners to implement watershed projects that employ nonpoint source control practices and often monitor water quality results. Local watershed projects have resulted in significant reductions of atrazine levels in targeted drinking water reservoirs, in certain cases bringing them into compliance with water quality standards.

Programs with dedicated funding sources have worked best. A tax on coal has funded reclamation of abandoned coal mined lands nationwide. Eighteen years of such reclamation in Missouri has reduced the number of stream miles impaired by acid mine drainage from about 100 to about eight miles. A state sales tax for soil erosion control started providing funds for watershed level soil erosion control programs in 1985. This program, coupled with federal soil conservation programs, is reducing soil erosion in Missouri, based on the findings of periodic USDA National Resource Inventories.

### **COSTS AND BENEFITS**

The economic costs of wastewater treatment and nonpoint source management are extremely diffuse and difficult to calculate. The total operating costs of municipal, private, and industrial treatment plants are not readily available. Likewise, it is difficult to estimate total expenditures on nonpoint source management. The amounts that the State of Missouri spends on various aspects of water pollution control and prevention, however, may give some indication of the relative investments required.

The Missouri Department of Natural Resources annually spends about \$2 million on monitoring and analysis of ambient water and related media. Approximately \$2.3 million is spent on permit issuance annually and about \$5.1 million on other facets of water pollution control and administrative support. Another significant expense is grants aimed at the improvement of water quality. The Section 319 grant program distributes about \$2.6 million annually and the Special Area Land Treatment (SALT) Program about \$6.8 million.

The economic benefits of improved water quality are even harder to quantify. Of all the money spent on water-based recreation and fishing in Missouri, it is nearly impossible to tell how much is dependent upon improved water quality. The same is true for the expense of drinking water treatment. But however much the economic benefits may be, the true benefits of clean water are high-quality recreation experiences, healthy and confident use of water

resources and a robust aquatic biological community.

## STATE CONCERNS

- It is believed that channelization may have caused aquatic habitat degradation in roughly 17 percent of Missouri's streams, mainly in the northern and western plains and the southeastern lowlands. Large channelization projects affecting many miles of streams are no longer occurring, but many short projects still occur and continue to reduce the number of miles of natural stream channels statewide. Streams that were channelized many years ago still provide poor aquatic habitat, and these streams still contribute to flooding, high water velocities and streambank erosion as they try to recreate their natural sinuosity.
- Eutrophication of large, recreationally important reservoirs continues to be a concern. Heavy residential development around portions of Lake of the Ozarks and Table Rock Lake threatens water quality in many small coves and shoreline areas. The large size of these lakes and rugged local topography make centralized collection and treatment systems for wastewater difficult. Increasing confined animal production in the watersheds of these lakes is aggravating nutrient problems from wastewater treatment plants and septic tanks. Recent imposition of phosphorus limits on most wastewater discharges to Table Rock Lake has resulted in improved conditions in the James River arm of the lake.
- Mercury levels in fish in Missouri appear to be generally stable in recent years. Re-evaluation of human health risk factors for mercury has led the Missouri Department of Health & Senior Services to issue an advisory regarding fish consumption among children 12 years of age and under, pregnant women and women who may become pregnant. These people are advised to limit consumption of all fish caught in Missouri to one meal per week, and consumption of bass over 12 inches in length to one meal per month. For other aspects of the advisory, please refer to [www.dhss.mo.gov/NewsAndPublicNotices/07FishAdvisory.pdf](http://www.dhss.mo.gov/NewsAndPublicNotices/07FishAdvisory.pdf).
- Abandoned lead-zinc mines and their tailings continue to impact waters decades after mining has ceased. Missouri's Superfund Program is addressing some of these concerns. But long-term impacts are expected to remain. Although new mineral extraction operations would be managed under state permits, areas of the state that are very sensitive to disruption are being investigated for mining potential.
- Additional groundwater protection measures are needed. Missouri now has in place programs that register and inspect underground storage tanks and oversee the cleanup of leaking underground tank sites, programs for wellhead protection, sealing of abandoned wells and closing of hazardous waste sites. A complete groundwater protection program would also include a groundwater monitoring network and educational programs for those involved in the application of farm chemicals, transporters of hazardous materials and the general public.
- There are 388 Class I concentrated animal feeding operations (CAFOs) located in Missouri. These are operations containing at least 1,000 beef cattle, 2,500 large swine, or 100,000 broiler chickens. These facilities generate large amounts of animal manure and have the potential to cause serious water pollution problems. The department is also concerned by cumulative impacts of numerous small animal production facilities. However, it is no longer issuing Letters of Approval for smaller facilities, meaning that they will be largely unregulated.
- Fish and invertebrates data indicate that many communities throughout the state are suffering from degraded quality of aquatic habitat. Physical alterations of the channel, alterations in stream flow patterns, degraded conditions in the riparian zone, and upland land use changes are all believed to be significant contributors to this problem.
- Throughout all urban areas of the state, continuing suburban development impacts streams by the direct loss of stream channels by shortening, culverting and removing riparian areas and by other impacts associated with development and increased storm water flows.



Table 1. Beneficial Use Support Status Of Missouri Classified Waters.\*

| STATUS     |                          | STREAM MILES | %    | LAKE ACRES | %    |
|------------|--------------------------|--------------|------|------------|------|
| Assessed   | Unimpaired               | 13,383.5     | 60.2 | 272,133    | 92.6 |
|            | Impaired                 | 1,062.7      | 4.8  | 19,522     | 6.6  |
| Unassessed | Impairment Not Suspected | 291.6        | 1.3  | 84         | 0.1  |
|            | Impairment Suspected     | 7,478.2      | 33.7 | 2,020      | 0.7  |

Numbers in Table 1 updated January 4, 2007.

**Unimpaired:** Water quality meets the needs of all uses that Missouri recognizes for a particular water body, such as protection of fish and other aquatic life (the water quality does not interfere with the ability of aquatic life to live, feed and reproduce), livestock and wildlife watering (the water will not cause disease or injury to livestock and wildlife using the water for drinking), drinking water supply (the water meets all state and federal standards as a drinking water supply source water), swimming (the water will not cause disease or injury to swimmers or others participating in water-based recreation who may accidentally swallow small amounts of water), irrigation (the water will not cause disease or injury to crops), industrial water supply (the water will not cause excessive problems with corrosivity or mineral deposits in industrial piping and boilers), fish consumption (fish are safe to eat) and boating and canoeing.

**Impaired:** Water quality is seriously affected to the point that at least one recognized use of the water body has been lost. These impairments are documented by data that meets the requirements of Missouri's 303(d) Listing Methodology.

**Impairment Not Suspected:** There is inadequate information to make a water quality assessment of these waters, and the department knows of no data or information that would indicate a possible impairment.

**Impairment Suspected:** These are waters for which some data or observations exist indicating that one or more designated uses may not be supported, but the data are not of sufficient quantity or quality to officially rate the water as impaired. The bulk of these waters are streams in the plains areas of the state, where nearly all streams have been affected or modified by agriculture.

\* There are 22,216 miles of classified streams (permanently flowing streams or streams which maintain permanent pools during dry weather) and approximately 30,000 miles of unclassified streams (streams which are without water during dry weather). There are 293,759 surface acres of classified lakes. The number of surface acres of small unclassified lakes has not been estimated.

Table 2. Individual Use Support Summary For Classified Waters.

| BENEFICIAL USE         | SIZE ASSESSED | FULL SUPPORT | NON-SUPPORT | NOT ASSESSED | USE NOT APPLICABLE |
|------------------------|---------------|--------------|-------------|--------------|--------------------|
| <b>STREAMS (MILES)</b> |               |              |             |              |                    |
| AQUATIC LIFE           | 14,076.7      | 13,379.7     | 697.0       | 8,139.3      | 0                  |
| FISH CONSUMPTION       | 1,736.0       | 1,711.0      | 25.0        | 20,480.0     | 0                  |
| SWIMMING               | 5,925.6       | 5,591.6      | 334.0       | 15,370.0     | 920.4              |
| DRINKING WATER         | 2,813.7       | 2,765.2      | 48.5        | 422.5        | 18,979.8           |

| <b>LAKES (ACRES)</b> |         |         |        |         |         |
|----------------------|---------|---------|--------|---------|---------|
| AQUATIC LIFE         | 292,213 | 291,330 | 883    | 1546    | 0       |
| FISH CONSUMPTION     | 121,070 | 102,460 | 18,610 | 172,689 | 0       |
| SWIMMING             | 260,873 | 260,873 | 0      | 32,886  | 0       |
| DRINKING WATER       | 100,311 | 100,282 | 29     | 0       | 193,448 |

Table 3. Major Water Pollution Sources In Missouri Classified Waters.  
(Stream Miles or Lake Acres Impaired)

| <b>Source</b>                              | <b>Stream Miles Impaired</b> | <b>Percent of Total Miles</b> | <b>Lake Acres Impaired</b> | <b>Percent of Total Acres</b> |
|--|------------------------------|-------------------------------|----------------------------|-------------------------------|
| Unknown                                    | 724.6                        | 3                             | --                         | --                            |
| Mining                                     | 171.6                        | 1                             | --                         | --                            |
| Tailings                                   | 105.7                        | *                             | --                         | --                            |
| Other Mining Activities                    | 65.9                         | *                             | --                         | --                            |
| Atmospheric Deposition                     | 2.5                          | *                             | 18,610                     | 6                             |
| Municipal and other Domestic Point Sources | 82.3                         | *                             | --                         | --                            |
| Urban Runoff and Construction              | 61.3                         | *                             | 18                         | *                             |
| Agriculture                                | 19.5                         | *                             | 29                         | *                             |
| Crop Production                            | 2.0                          | *                             | 29                         | *                             |
| Hydromodification                          | 15.0                         | *                             | 865                        | *                             |
| Flow Regulation/Modific.                   | 1.0                          | *                             | --                         | --                            |
| Streambank Mod./Destab.                    | 14.0                         | *                             | --                         | --                            |
| Upstream Impoundment                       | --                           | --                            | 865                        | *                             |
| Natural Sources                            | 8.0                          | *                             | --                         | --                            |
| Industrial Point Sources                   | 7.3                          | *                             | --                         | --                            |
| Recreational Activities                    | 6.0                          | *                             | --                         | --                            |

\* Less than 1 percent

Table 4. Major Contaminants In Missouri Classified Waters.

| <b>Contaminant</b>           | <b>Stream Miles Impaired</b> | <b>Percent of Total Miles</b> | <b>Lake Acres Impaired</b> | <b>Percent of Total Acres</b> |
|------------------------------|------------------------------|-------------------------------|----------------------------|-------------------------------|
| Organic Enrichment /Low D.O. | 418.6                        | 2                             | 865                        | *                             |
| Bacteria                     | 345.0                        | 1                             | --                         | --                            |
| Unknown                      | 116.8                        | 1                             | --                         | --                            |
| Metals                       | 101.6                        | *                             | 18,610                     | 6                             |
| Mercury                      | --                           | --                            | 18,610                     | 6                             |

|                      |      |    |    |    |
|----------------------|------|----|----|----|
| Lead                 | 92.7 | *  | -- | -- |
| Cadmium              | 69.5 | *  | -- | -- |
| Zinc                 | 53.0 | *  | -- | -- |
| Nickel               | 3.4  | *  | -- | -- |
| Manganese            | 1.5  | *  | -- | -- |
| Sediment             | 73.7 | *  | -- | -- |
| Sulfate              | 65.5 | *  | -- | -- |
| Chloride             | 35.4 | *  | 18 | *  |
| Ammonia              | 26.5 | *  | -- | -- |
| pH                   | 23.3 | *  | -- | -- |
| Thermal Modification | 14.9 | *  | -- | -- |
| Color                | 1.4  | *  | -- | -- |
| Gas Supersaturation  | 1.0  | *  | -- | -- |
| Chlorine             | 0.4  | *  | -- | -- |
| Pesticides           | --   | -- | 29 | *  |

\* Less than 1 percent

Note: Many stream miles in Missouri are affected by more than one pollution source or pollutant; therefore, total miles/acres in Tables 3 and 4 can exceed miles/acres in Table 1 and 2.

## CHAPTER 2. MISSOURI AND ITS WATER RESOURCES

Missouri has an area of more than 69,000 square miles and a population of 5.6 million people. About half of the population is concentrated along the border areas on opposite sides of the state in the Kansas City and St. Louis metropolitan areas. Population as well as industrial and commercial activity in major urban areas has remained relatively stable for the past few decades. Patterns of rural land use have changed greatly in some areas, particularly residential development around the larger cities, recreational development adjoining Lake Taneycomo and the eastern ends of Lake of the Ozarks and Table Rock Lake and the increasing development of large concentrated animal feeding operations in north-central and southwestern Missouri.

Missouri has an extensive stream network that includes more than 22,000 miles of classified streams and more than 293,000 surface acres in its 457 classified lakes. Three distinct regions exist within the state's boundaries and the particular geology and land use of each affect water quality. These areas are a prairie region, which is rolling land predominantly used for row crops and pasture; the Ozarks, a hilly area that is mostly pasture and forest; and the Bootheel, a flat alluvial plain adjoining the Mississippi River in southeast Missouri, which is used mainly for row crop production.

Missouri's Water Quality Standards (10 CSR 20-7.031) provide the names and locations of all classified streams and lakes. This state regulation defines more than 3,600 individual stream and river segments and 457 lakes, lists which beneficial uses are assigned to each of these waters, and defines the level of water quality necessary to meet each of these uses.

The remaining waters of the state, such as those in the headwater areas that do not have permanently flowing or standing water, and a number of small lakes, are not listed in the Missouri Water Quality Standards and do not have beneficial uses assigned to them. These unclassified waters are protected by the general criteria in the Water Quality Standards. The general criteria say that these waters must be free from such aesthetic problems as demolition debris, trash, tires, odor, discoloration or the presence of objectionable floating or deposited material. The general criteria also say the waters must be free from conditions harmful to livestock or aquatic life.

Table 5. Missouri's Water Resources.

|  |                      |
|--|----------------------|
| Missouri Population (2000 census)          | 5,595,211            |
| Surface Area (square miles)                | 69,704               |
| Number of Four-Digit HUCs*                 | 12                   |
| Number of Eight-Digit HUCs*                | 66                   |
| Number of Twelve-Digit HUCs*               | 1,965**              |
| Classified Stream Miles                    | 22,216               |
| Unclassified Stream Miles                  | 82,126               |
| Number of Classified Lakes                 | 457                  |
| Total Classified Lake Surface Area (acres) | 293,759              |
| Freshwater Wetlands Area (acres)           | Less than 480,000*** |

\*HUC (Hydrological Unit of Classification): A hierarchical system of watershed delineation, developed by USGS. The system describes scales ranging from major continental basins (two digits) to small local drainages (14 digits).

\*\* The NRCS is now working on the 11<sup>th</sup> version of the 12-digit HUC delineation for the United States. This version is not yet completed and the final number of 12-digit HUCs could be slightly different.

\*\*\* Estimate from Epperson, J.E. 1992, "Missouri Wetlands: A Vanishing Resource", Missouri Dept. of Natural Resources, Division of Geology and Land Survey, Water Resources Report No.39.

## CHAPTER 3. SURFACE WATER ASSESSMENT

### DESCRIPTION OF MISSOURI'S CURRENT WATER QUALITY MONITORING PROGRAM

#### Purpose

The major purposes of the water quality monitoring program are (1) to characterize background or reference water quality conditions; (2) to better understand daily, flow event and seasonal water quality variations and their underlying processes; (3) to characterize aquatic biological communities and habitats and to distinguish between the impacts of water chemistry and habitat quality; (4) to assess time trends in water quality; (5) to characterize local and regional impacts of point and nonpoint source discharges on water quality; (6) to check for compliance with water quality standards or wastewater permit limits; (7) to aid in developing TMDLs to prescribe acceptable limits of pollutants to be discharged; and (8) to support development of strategies to return impaired waters to compliance with water quality standards. All of these objectives are statewide in scope.

#### Coordination with Other Monitoring Efforts in Missouri

The department cooperates with other agencies in performing special water quality studies. In 1998, a multi-agency task force including the Missouri Department of Natural Resources, Missouri Department of Conservation (MDC), U.S. Environmental Protection Agency (USEPA), the U.S. Geological Survey (USGS), U.S. Forest Service (USFS), USDA. Natural Resources Conservation Service (USDA NRCS), and University of Missouri convened to develop an outline of a statewide aquatic resources monitoring plan, define partnership roles in this monitoring plan and discuss the kind of research needed to further this new monitoring effort. The first major product of this work group was an agreement to initiate a cooperative statewide aquatic invertebrate and fish monitoring program by MDC and the Department of Natural Resources. In 2000, the Missouri Resource Assessment Monitoring (RAM) Program was created. The RAM Program is a biological monitoring program that monitors fish and invertebrate communities in wadeable streams throughout the state. It is designed to sample the entire state every five to six years. MDC has taken the lead, sampling more than 100 sites each year in various Ecological Drainage Units. Since it began, more than 700 fish samples and 400 invertebrate samples have been taken.

To maximize efficiency, the department routinely coordinates its monitoring activities to avoid overlap with other agencies and provide and receive interagency input on monitoring study design. Data from other sources is used for meeting the same objectives as department sponsored monitoring. The agencies most often involved are USGS, USEPA, MDC, the U.S. Army Corps of Engineers (COE), the USDA Agricultural Research Service (ARS) and the Missouri Department of Health & Senior Services (MDHSS). However, the department also tracks the monitoring efforts of the National Park Service (NPS), USFS, several of the state's larger cities, the states of Arkansas, Kansas, Iowa, and Illinois, and graduate level research conducted at universities within Missouri. The department also uses monitoring data acquired by wastewater dischargers as a condition of discharge permits issued by the department. The department began using data collected by volunteers that have passed Quality Assurance and Quality Control (QA/QC) tests in 1995.

#### Networks and Programs

##### 1. Fixed Station Network

- A. Objective: To better characterize background or reference water quality conditions, to better understand daily, flow event and seasonal water quality variations and their underlying processes, to assess time trends and to check for compliance with water quality standards.
- B. Design Methodology: Sites are chosen based on one of the following criteria:
  - site is believed to have water quality representative of many neighboring streams of similar size due to similarity in watershed geology, hydrology and land use, and the absence of any impact from a local point or discrete nonpoint water pollution source.
  - site is downstream of a significant point source or localized nonpoint source area.

C. Number of Sites, Sampling Methods, Sampling Frequency, Parameters:

- USGS/DNR cooperative network: 59 sites statewide, horizontally and vertically integrated grab samples six to 12 times per year, analyzed for nutrients, temperature, pH, dissolved oxygen, percent saturation, specific conductance, flow, *E. coli*, fecal streptococci, and fecal coliform; trace metals, major ions and suspended solids two to 12 times annually at all sites; pesticides six times annually at four sites.
- DNR chemical monitoring of more than 90 sites two to four times per year for nutrients, major ions, flow, temperature, pH, dissolved oxygen and specific conductance.
- DNR raw water sampling of public drinking water reservoirs: grab samples at nine sites four times per year for 10 common agricultural herbicides.
- UMC/DNR lake monitoring network: about 100 lakes monitored spring through fall for nutrients, chlorophyll, turbidity and suspended solids.
- DNR routine monitoring of finished public drinking water supplies for bacteria and trace contaminants.
- Routine bacterial monitoring of swimming beaches at Missouri state parks during the recreational season by the department's Division of State Parks.
- Routine monitoring of sediment on 10 to 15 discretionary sites annually. All sites are monitored for several heavy metals and organic contaminants. A pore water sample is analyzed for ammonia and a Microtox toxicity test or similar toxicity screening test on the pore water or whole sediment sample is performed.

2. Intensive Surveys

A. Objective: To characterize the water quality impacts from a specific pollutant source area.

B. Design Methodology: Determination of contaminants of concern based on previous water quality studies, effluent sampling and/or NPDES permit applications, use of multiple sampling stations downstream and upstream (if appropriate). If contaminants of concern have significant seasonal or daily variation, season of the year and time of day variation must be accounted for in sampling design. These studies would also require multiple samples per site over a relatively short time frame (e.g., 6 to 8 visits over a 2 to 3 day period or 10 to 15 visits over a 2 to 3 year period).

C. Number of Sites, Sampling Methods, Sampling Frequency, Parameters: The Missouri Department of Natural Resources conducts or contracts for 10 to 15 special studies annually. Each study has multiple sampling sites. Number of sites, sampling frequency and parameters vary greatly depending on the study.

3. Toxics Monitoring Program

Monitoring of toxics is not a separable part of the monitoring program. The fixed station network and many of our intensive studies monitor for toxic chemicals. In addition, major municipal and industrial dischargers must monitor for toxicity in their effluents as a condition of their NPDES permits.

4. Biological Monitoring Program

The Missouri Department of Natural Resources has developed a monitoring program for aquatic invertebrates that is proving very useful for characterizing the health of aquatic biological communities in Missouri. Forty-five reference streams were identified across the state during the 1990s and were used to develop criteria describing reference communities of macroinvertebrates for different ecological regions. More than 50 stream sites are sampled annually, generally chosen to support the formation of the 303(d) list and the creation of TMDLs. Sampling results and data analysis are available from a central database. A long-term objective of the program is to establish a fixed statewide network of biological monitoring stations in order to monitor large-scale trends. Fish sampling must also be a part of an effective long-term biological monitoring program.

The department contracted with the U.S. Geological Survey in 2001 to conduct a study of aquatic invertebrate communities on the Missouri River. The study, *Validation of Aquatic Macroinvertebrate Community Endpoints*

*for Assessment of Biological Condition in the Lower Missouri River*, was published in 2005. The department sees this work as the first of several steps by which it will promote a better understanding of fish and invertebrate communities of large rivers, and ultimately the development of biological criteria for the Missouri and Mississippi rivers.

## 5. Fish Tissue

- A. Objective: Fish tissue monitoring can address two separate objectives. These are 1) the assessment of ecological health or the health of aquatic biota, and 2) the assessment of human health risk based on the level of contamination of fish fillets.
- B. Design Methodology. Sites were chosen based on one of the following criteria:
- site is believed to have water and sediment quality representative of many neighboring streams of similar size due to similarity in geology, hydrology and land use, and the absence of any known impact from a local point source or discrete nonpoint water pollution source.
  - site is downstream of a significant point source or localized nonpoint source area.
- C. Number of Sites, Sampling Methods, Sampling Frequency, Parameters:  
The department and USEPA have a cooperative fish tissue monitoring program that collects whole fish composite samples at approximately 13 fixed sites once every two years. The preferred species for these sites are either carp or redhorse sucker. About 45 discretionary sites are also sampled annually for two fish fillet composite samples. The Missouri Department of Conservation is a partner in this portion of the program. One sample is of a top carnivore fish such as largemouth bass, smallmouth bass, walleye or sauger. The other sample is for a species of a lower trophic order such as catfish, carp or sucker.

In addition, MDC samples approximately 20 sites annually through its Fish Contaminant Monitoring Program, which began in 1984. A wide variety of species are sampled. Both of these monitoring programs analyze for several chlorinated hydrocarbon insecticides, PCBs, lead, cadmium, mercury and fat content.

### Laboratory Analytical Support

#### Laboratories Used:

- USGS/DNR Cooperative Fixed Station Network: USGS Lab, Denver, Colorado
- DNR Public Drinking Water Reservoir Network: Missouri Department of Natural Resources Environmental Lab
- Intensive Surveys: varies, many are done by Missouri Department of Natural Resources Environmental Lab
- Toxicity Testing of Effluents: many commercial labs
- Biological Criteria for Aquatic Invertebrates: Missouri Department of Natural Resources Environmental Lab and University of Missouri, Columbia
- Fish Tissue: USEPA Region VII Lab, Kansas City, Kansas and miscellaneous contract labs (Missouri Department of Conservation)
- NPDES self-monitoring: commercial labs
- DNR Public Drinking Water Monitoring: Missouri Department of Natural Resources and commercial labs

### Quality Assurance/Quality Control Program (QA/QC)

Missouri and Region 7 EPA have completed a Total Quality Management Plan. All environmental data generated directly by the department or through contracts funded by the department or EPA will require a quality assurance project plan (QAPP) following EPA's Guidance for Quality Assurance Project Plans (QA/G-5).

### Data Storage and Management

The department retrieves raw data from the USGS database, NWIS, and numerous state, federal and municipal sources. This data is imported into the Missouri state computer system for storage and statistical analysis. The

department maintains a good deal of water quality data in a number of ACCESS databases. Data in these files comes from the department's own monitoring efforts and a wide array of other public and private sources.

Beginning in 1999, the department began linking many separate databases pertaining to water quality, other environmental data and information on regulated facilities via ACCESS software and importing this data into a GIS (ArcView) environment. The majority of the work has been completed, but new data that enters this process is received on a regular basis.

The Missouri Department of Natural Resources has developed a database that provides access to the raw data and analysis of all quantitative invertebrate sampling it has performed. Within the next year, the Missouri Department of Conservation plans to have on-line access to its RAM database, as well as its fisheries and aquatic habitat database that contains community-level data. These databases are updated on an ongoing basis.

### Training and Support of Volunteer Monitoring

Two volunteer monitoring programs are now generating water quality data in Missouri. The first is a cooperative program between the Department of Natural Resources, the University of Missouri, and volunteers who monitor approximately 40 lakes, including Lake Taneycomo, Table Rock Lake, and several lakes in the Kansas City and St. Louis area. In 2005, approximately 100 volunteers monitored 100 sites on 41 lakes throughout Missouri. Data from this program is used by the university as part of a long-term study on the limnology of Midwestern reservoirs.

The second program involves volunteers who monitor water quality of streams throughout Missouri. The Volunteer Water Quality Monitoring Program is a cooperative project of the Department of Natural Resources, the Department of Conservation, and the Conservation Federation of Missouri and is a subset of the Missouri Stream Team Program. In 2006, 268 new Stream Teams formed, and in April the number of Stream Teams reached 3,000. In 2006, 360 citizen volunteers had attended the introductory level workshop. After the introductory class, many proceeded on to at least one more class of higher level training; Levels 1, 2, 3, and 4. A new level of training, Cooperative Site Investigation (CSI) replaced Level 4 training in September 2006. Each level of training is a prerequisite for the next higher level, as is appropriate data submission. Levels 2, 3, and CSI represent increasingly higher quality assurance and quality control stringency. Of those completing an introductory course, 25 (about 7 percent) proceeded through Level 1 and successfully attained a ranking of Level 2. Data submitted by volunteers of Level 2 or above may be used by the department to establish baselines of water quality for particular streams, or to point out potential problems that are in need of further investigation.

In 2006, approximately 420 citizens were trained in at least one workshop. During that period of time, 174 individuals continued on in the training series and 25 of them attained a Level 2 certification. No Level 3 quality assurance and quality control audits were completed in Fiscal Year 2006 due to staffing changes. Wastewater and drinking water operators have also started attending in order to receive operator certification credits. To date, 24 operators have attended Stream Team training.

During Fiscal Year 2006, Level 2 and 3 monitors submitted 109 sets of macroinvertebrate data from 118 different stream sites. In that same time period, 321 sets of water chemistry data from 167 sites were submitted. Also, Level 4 volunteers participated in four biological monitoring events and 41 chemical monitoring events. Water chemistry data from these events was generated from on-site analysis, and the bacterial data was analyzed by the State Environmental Laboratory, providing even higher data credibility.

### Data Interpretation and Communication

Missouri now uses an ACCESS database for tracking and reporting water body use attainment information. An EPA contractor, RTI, completed geo-referencing of Missouri's classified waters in 1998. The stream and lake network of the state, water quality standards information, the locations of permitted wastewater discharges and other potential pollutant sources and information describing them can now all be viewed within a GIS (ArcView) environment.

The department has a variety of water quality information available on its Web site ([www.dnr.mo.gov](http://www.dnr.mo.gov)). This information includes, or will include, TMDLs, the 305(b) Report and 303(d) List, a list of all classified waters of Missouri that includes monitoring and assessment information on each water, water quality information sheets for



303(d) candidate waters, and watershed information sheets from various watersheds around the state.

#### Sharing Data with the Public

Water quality data accessibility is easy. Contact the Water Protection Program for more information.

1. Requests for very general information on water quality may be made by calling 1-800-361-4827. They may be filled by the 305(b) Report, pamphlets or fact sheets. Much of this information, plus information on Missouri's 303(d) List and completed Total Maximum Daily Load (TMDL) studies, is also available on the Internet at:

<http://www.dnr.mo.gov/env/wpp/wp-index.html>

2. Some requests may be for information on a specific water body or for more detailed information on a specific topic that might include summaries of major studies or available data. These requests are usually filled by the Missouri Watershed Information Sheets, documents that describe Missouri's watersheds and provide information on land use, hydrogeology, stream flow and water quality issues and concerns in each.
3. More specific requests may require published reports or water quality data files. If the report or data was generated by the department, it can be sent to the requestor through electronic mail or regular mail (a hard copy for small reports and data files, or floppy or compact disks for larger data files). Alternatively, the requestor may visit the department office at 1101 Riverside Dr. in Jefferson City and view the files directly. If the report or data file did not originate with the department, the request is sent to the organization that published the report or data.

Requests for more specific water quality information, or requests to view water quality data files, should be sent to:

Missouri Department of Natural Resources  
Water Protection Program  
ATTN: John Ford  
P.O. Box 176  
Jefferson City, MO 65102-0176  
Phone: (573) 751-7024 Fax: (573) 522-9920  
Email: [john.ford@dnr.mo.gov](mailto:john.ford@dnr.mo.gov)

#### Monitoring Program Evaluation

The water quality monitoring program within the department has traditionally focused on the chemical characterization of water quality in both those streams that are free of, and subject to, point source wastewater discharges. While the monitoring has been able to keep pace with our more critical point source assessment needs and has done a good job of characterizing regional water quality unimpaired by point source discharges, the size and scope of the department's monitoring has fallen far short of the state's information needs. The advent of large concentrated animal feeding operations (CAFOs) in Missouri, concern over eutrophication of our large recreational lakes and continuing urban sprawl, among other problems, have produced questions our present monitoring program is incapable of answering.

A water quality monitoring strategy for Missouri was completed in 2005. This proposal provides an overview of the current monitoring program and identifies additional needs.

#### **ASSESSMENT METHODOLOGY**

This section describes the procedures used by the Missouri Department of Natural Resources to rate the quality of Missouri's waters.

Water quality is judged by its conformance with Missouri's Water Quality Standards. These standards were first

implemented for all Missouri streams and a few large lakes in 1970 and are revised at least once every three years. These standards now list more than 22,000 miles of classified streams, 457 classified (significant public) lakes representing 293,759 surface acres of water, and the uses for which these waters are protected. These standards also list the maximum allowable concentrations of chemicals and bacteria in these waters.

The table below lists the various uses of Missouri's waters and the portions of state waters that are protected for each use.

Table 6. Missouri Waters Protected For Various Uses.

| <u>Designated Use</u>                | <u>Stream<br/>Miles</u> | <u>% of<br/>Total</u> | <u>Lake<br/>Acres</u> | <u>% of<br/>Total</u> |
|--------------------------------------|-------------------------|-----------------------|-----------------------|-----------------------|
| Protection of Aquatic Life and       |                         |                       |                       |                       |
| Fish Consumption                     | 22,216.0                | 100                   | 293,759               | 100                   |
| Subset: Warm-Water Fishery           | 19,493.4                | 88                    | 283,029               | 96                    |
| Cool-Water Fishery*                  | 2,369.5                 | 11                    | 0                     | 0                     |
| Cold-Water Fishery**                 | 353.1                   | 2                     | 10,730                | 4                     |
| Livestock and Wildlife Watering      | 22,216.0                | 100                   | 293,759               | 100                   |
| Whole-Body-Contact Recreation        | 21,295.6                | 96                    | 293,759               | 100                   |
| Boating                              | 7,105.8                 | 32                    | 235,143               | 80                    |
| Drinking Water Supply                | 3,236.2                 | 15                    | 100,311               | 34                    |
| Industrial                           | 1,252.0                 | 6                     | 7,003                 | 2                     |
| Irrigation                           | 3,935.0                 | 18                    | 0                     | 0                     |
| Anti-degradation:                    |                         |                       |                       |                       |
| Outstanding National Resource Waters | 171.2                   |                       |                       |                       |
| Outstanding State Resource Waters    | 200.5***                |                       |                       |                       |
| Total Classified Waters in Missouri  | 22,216.0                |                       | 293,759               |                       |

\* Smallmouth Bass, Rock Bass

\*\* Trout

\*\*\* Outstanding State Resource Waters also include 270 acres of marsh wetlands in three locations.

Classified streams of Missouri are all permanently flowing streams or streams with permanent pools. All classified waters of the state, including significant public lakes, are classified for protection of aquatic life, livestock and wildlife watering, and fish consumption by humans. The Water Quality Standards for these uses set the maximum allowable concentrations for 110 chemicals in these waters. A subset of these waters classified for drinking water supply has maximum allowable concentrations for an additional 20 chemicals in the standards. Waters protected for whole body contact recreation such as swimming or water skiing also have a maximum allowable bacteria standard.

Missouri's Water Quality Standards also contain narrative criteria. These standards are not numbers but general statements about the expectations for waters of the state. These standards require waters to be free of objectionable odors, color, turbidity, trash, floating materials or bottom deposits, and of conditions harmful to aquatic life such as high water temperature, low dissolved oxygen or chemical toxicity. Importantly, these standards apply not just to the classified waters, but to all waters of the state including the small intermittent streams that only carry water during and shortly after rainfall or snow melt.

Table 7, below, shows how the chemical and bacterial standards and aquatic biological information are used to rate the quality of Missouri's waters for the 2006 305(b) report. The methods contained in Table 7 undergo revision every other year and will be revised before being used in the formulation of Missouri's 2008 303(d) List.

Table 7. Methods For Assessing Compliance With Water Quality Standards.

| BENEFICIAL USES                              | DATA TYPE  | DATA QUALITY CODE | COMPLIANCE WITH WATER QUALITY STANDARDS   |
|--|--|-------------------|---|
| Overall use protection (all beneficial uses) | No data--evaluated based on similar land use/ geology as stream with water quality data. <sup>1</sup>  | na                | Given same rating as monitored stream with same land use and geology.   |
| Any beneficial uses.                         | No data available or where only effluent data is available. Results of dilution calculations or water quality modeling (see ALRR p.38). <sup>1</sup> | na                | Where models or other dilution calculations indicate noncompliance with allowable pollutant levels and frequencies noted in this table, waters may be added to category 3B and considered high priority for water quality monitoring.   |
| Overall use protection (all beneficial uses) | Narrative criteria for which quantifiable measurements can be made.  | 1                 | <p><u>Full</u>: Stream appearance typical of reference streams in this region of the state.</p> <p><u>Non-Attainment</u>: Presence of objectionable or unsightly color, odor, turbidity, bottom deposits, oil, scum, floating or suspended debris, or the presence of substances in sufficient amounts to prevent full maintenance of beneficial uses. For the purposes of 303(d) listing, a water body will be considered to be not in conformance with narrative water quality criteria if these quantifiable limits are exceeded. Acute criteria for aquatic life shall not be exceeded more than one time in three years.</p> <p>Color: Color as measured by the Platinum-Cobalt visual method (SM 2120 B) in a water is statistically significantly higher than in a control water.</p> <p>Objectionable Bottom Deposits: The affected stream segment must be at least 100 yards in length, and for all areas within this affected segment that have a flow velocity less than 0.5 feet/second at the time the stream is evaluated, greater than 10% of the stream bottom is covered by sewage sludge, trash or other materials reaching the water due to anthropogenic sources.</p> |

| BENEFICIAL USES            | DATA TYPE  | DATA QUALITY CODE | COMPLIANCE WITH WATER QUALITY STANDARDS   |
|----------------------------|--|-------------------|---|
|                            |  |                   | Note: Waters in mixing zones and unclassified waters which support aquatic life on an intermittent basis shall be subject to acute toxicity criteria for protection of aquatic life. Waters in the initial Zone of Dilution (ZID) shall not be subject to acute toxicity criteria.  |
| Protection of Aquatic Life | Toxic Chemicals  | 1-4               | <p><u>Full</u>: No more than 1 acute toxic event in three years. No more than one exceedence of acute or chronic criterion in 3 years for all toxics other than ammonia; for ammonia, no more than one exceedence of acute criterion in 3 years and 10% or fewer of all samples exceed chronic criterion.<sup>2,3</sup></p> <p><u>Non-Attainment</u>: Requirements for full attainment not met (see CALM p.27, 30. ALRR p.39).</p>  |
| Protection of Aquatic Life | Conventional (pH, temperature, dissolved oxygen, total dissolved gases, oil and grease, sulfate plus chloride) | 1-4               | <p><u>Full</u>: No more than 10% of all samples exceed criterion.<sup>2</sup></p> <p><u>Non-Attainment</u>: Requirements for full attainment not met.</p>   |
| Protection of Aquatic Life | Biological   | 3-4               | <p><u>Full</u>: Fauna very similar to regional reference streams. If DNR wadeable streams macroinvertebrate sampling and evaluation protocols are followed, for seven or fewer samples, at least 75% of the stream condition index scores must be 16 or greater. For greater than seven samples or for other sampling and evaluation protocols, results must be statistically similar to representative reference or control streams.</p> <p><u>Non-Attainment</u>: If DNR wadeable streams macroinvertebrate sampling and evaluation protocols are followed, for seven or fewer samples, at least 75% of the stream condition index scores must be 14 or lower. For more than seven samples or for other sampling and evaluation protocols, results must be statistically dissimilar to representative reference or control streams.</p> |

| BENEFICIAL USES  | DATA TYPE   | DATA QUALITY CODE | COMPLIANCE WITH WATER QUALITY STANDARDS   |
|--|---|-------------------|---|
| Protection of Aquatic Life                                     | Toxicity testing of streams or lakes using aquatic organisms. | 2                 | <u>Full</u> : No more than one test result of statistically significant deviation from controls in acute or chronic test in a 3-year period. <sup>3</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met.  |
| Fish Consumption   | Chemicals (water)   | 1-4               | <u>Full</u> : Water quality does not exceed water quality standard. <sup>4</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met.   |
| Fish Consumption   | Chemicals (tissue)  | 1-2               | <u>Full</u> : Fish tissue levels in fillets do not exceed guidelines. <sup>5</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met.   |
| Drinking Water Supply <sup>6</sup><br>- Raw Water              | Chemical (toxics)   | 1-4               | <u>Full</u> : Water Quality Standard not exceeded. <sup>4</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met.  |
| Drinking Water Supply <sup>6</sup><br>- Raw Water              | Chemical (Total Dissolved Solids)                             | 1-4               | <u>Full</u> : Water Quality Standard not exceeded. <sup>4</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met   |
| Drinking Water Supply-Finished Water                           | Chemical (toxics)   | 1-4               | <u>Full</u> : No MCL* violations based on Safe Drinking Water Act data evaluation procedures.<br><u>Non-Attainment</u> : Requirements for full attainment not met.<br>NOTE: Finished water data will not be used for analytes where water quality problems may be caused by the drinking water treatment process such as the formation of Trihalomethanes (THMs), or problems that may be caused by the distribution system (bacteria, lead, copper). |
| Whole-Body-Contact Recreation and Secondary Contact Recreation | Fecal Coliform or E. coli count                               | 1-4               | <u>Full</u> : Water Quality Standards not exceeded as a geometric mean for samples collected during seasons and flow conditions for which bacteria criteria apply. <sup>4</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met.  |
| Irrigation, Livestock and Wildlife Water                       | Chemical  | 1-4               | <u>Full</u> : Water Quality Standard not exceeded. <sup>4</sup><br><u>Non-Attainment</u> : Requirements for full attainment not met   |

<sup>1</sup> This data type is used only for wide-scale assessments of aquatic biota and aquatic habitat for 305(b) report purposes. This data type is not used in the development of the 303(d) list.

<sup>2</sup> The time period used to calculate the average will be the entire period that is judged to be representative of present conditions. See Listing Methodology Document Data Age section.

<sup>3</sup> The test result must be representative of water quality for the entire time period for which acute or chronic criteria apply. The department will review all appropriate data, including hydrographic data, to insure only representative data is used. Except on large rivers where stormwater flows may persist at relatively unvarying levels for several days, grab samples collected during stormwater flows will not be used for assessing chronic toxicity criteria.

<sup>4</sup> See Listing Methodology section on Statistical Considerations and Table B-1.

<sup>5</sup> Fish tissue threshold levels are Chlordane 0.1 mg/kg (Crellin, J.R. 1989, "New Trigger Levels for Chlordane in Fish-Revised Memo" Mo. Dept. of Health interoffice memorandum. June 16, 1989), Mercury 0.3 mg/kg (based on two documents: Mercury Levels in Commercial Fish and Shellfish- <http://www.cfsan.fda.gov/~frf/sea-mehg.html> and FDA and EPA Announce the Revised Consumer Advisory on Methylmercury in Fish- <http://www.fda.gov/bbs/topics/news/2004/NEW01038.html>), PCBs 2.0 mg/kg (USFDA Industries Activities Staff Booklet, August 2000. <http://vm.cfsan.fda.gov/~lrd/daact.html>), and Lead 0.3 mg/kg (World Health Organization 1972. "Evaluation of Certain Food Additives and the Contaminants Mercury, Lead and Cadmium". WHO Technical Report Series No. 505, Sixteenth Report on the Joint FAO/WHO Expert Committee on Food Additives. Geneva 33 pp.

<sup>6</sup> Raw water samples used for compliance with source water criteria must be taken at a depth no deeper than the depth of the drinking water intake

\* Maximum Contaminant Level.

## WATER QUALITY ASSESSMENT

Table 8. Summary of Monitored and Evaluated Waters.

| Degree of Use Support              | Evaluated Stream Miles | Monitored Stream Miles | Total Stream Miles Assessed | Evaluated Lake Acres | Monitored Lake Acres | Total Lake Acres Assessed |
|------------------------------------|------------------------|------------------------|-----------------------------|----------------------|----------------------|---------------------------|
| Fully Supporting All Assessed Uses | 7,570.9                | 5,807.8                | 13,378.7                    | 24,067               | 248,066              | 272,133                   |
| Impaired For One or More Uses      | 0.0                    | 1,067.5                | 1,067.5                     | 0                    | 19,522               | 19,522                    |
| TOTAL ASSESSED                     | 7,570.9                | 6,875.3                | 14,446.2                    | 24,067               | 267,588              | 291,655                   |
| TOTAL UNASSESSED                   |                        |                        | 7,769.8                     |                      |                      | 2,104                     |

**Monitored waters** are those waters where water quality data has been collected recently enough to be considered representative of present conditions. Approximately 31 percent of all classified stream miles and 91 percent of all classified lake acres are considered to be monitored. The department only considers monitored waters in the development of the state's Section 303(d) List.

**Evaluated waters** are those waters which have not been monitored in recent years but have geology and land use similar to nearby monitored waters and whose water quality assessment is assumed to be the same as those nearby monitored waters. Thirty-four percent of all classified stream miles and eight percent of all classified lake acres are considered to be evaluated.

**Unassessed waters** are those waters that are not monitored directly nor do they have nearby monitored waters with similar geology and land use. Thus, these represent the classified waters in the state for which we are unable to make an accurate assessment of their compliance with water quality standards and Clean Water Act goals. Three percent of classified stream miles fall into this category. Less than one percent of classified lake acres are considered to be unassessed.

## ADDITIONAL INFORMATION ON MISSOURI LAKES

### Summary Statistics

Information on beneficial use attainment in classified (significant public) lakes is given in Tables 1 and 2. The acreage of classified lakes not fully supporting beneficial uses by major source category are as follows:

|                   |              |
|-------------------|--------------|
| Point Sources     | 0 acres      |
| Nonpoint Sources  | 18,657 acres |
| Hydromodification | 865 acres    |

### Background

Missouri's definition of significant lakes corresponds to the Department of Natural Resources list of classified lakes and includes lakes that falls into one of the following three categories: (1) small public drinking water reservoirs; (2) large multi-purpose reservoirs; and (3) reservoirs or lakes with important recreational values.

It should be noted that Missouri has only a few naturally occurring lakes, these being primarily depressions or old oxbows on the Missouri or Mississippi River floodplain. Most classified lakes in the state are man-made reservoirs. In addition, high acidity is not a problem in Missouri lakes due to the high amounts of calcium carbonate found in the geology.

### Trophic Status

Eutrophication is a natural process that occurs in lakes involving the gradual filling of the lake over time accompanied by increasing aquatic plant growth. This concept also encompasses the enrichment of lakes and reservoirs by addition of nitrogen and phosphorus from human activity. This additional nutrient load causes increased aquatic plant growth, predominantly of phytoplankton, which causes lake water to become greener and more turbid.

The trophic state of lakes typically refers to the amount of nitrogen and phosphorus entering the lake or the amount of algae or other aquatic plants present in the lake. Oligotrophic lakes are clear with few nutrients and very little aquatic plant growth. Mesotrophic, eutrophic and hypereutrophic are terms referring respectively to lakes with increasing levels of nutrients and aquatic plant growth. Trophic state is an important way to characterize lakes because it relates directly to such factors as lake clarity, which is greater in oligotrophic and mesotrophic lakes, and fish production, which tends to be greater in eutrophic lakes.

Summary results of studies conducted by the University of Missouri between 1989 and 2005 on trophic status of Missouri lakes follow.

Table 9. Trophic Status Of Selected Missouri Lakes And Reservoirs.

| <u>LAKE</u>           | <u>COUNTY</u> | <u>LOCATION</u> | <u>YEARS OF<br/>RECORD</u> | <u>SECCHI<sup>1</sup></u> | <u>TP<sup>2</sup></u> | <u>TN<sup>3</sup></u> | <u>CHL-A<sup>4</sup></u> | <u>TROPHIC<br/>STATE<sup>5</sup></u> |
|-----------------------|---------------|-----------------|----------------------------|---------------------------|-----------------------|-----------------------|--------------------------|--------------------------------------|
| <u>GLACIAL PLAINS</u> |               |                 |                            |                           |                       |                       |                          |                                      |
| *Allaman Lake         | Clinton       | 24, 56N, 30W    | 6                          | 1.2                       | 42                    | 682                   | 16                       | E                                    |
| Baring C. Club Lake   | Knox          | 26, 63N, 12W    | 9                          | 1.3                       | 28                    | 938                   | 20                       | E                                    |
| Bean Lake             | Platte        | 12/14, 54N, 37W | 1                          | 0.1                       | 264                   | 1,658                 | 144                      | HE                                   |
| Belcher Branch Lake   | Buchanan      | 8/17, 55N, 34W  | 4                          | 1.1                       | 35                    | 531                   | 13                       | E                                    |
| Bethany Lake #2       | Harrison      | 27, 64N, 28W    | 11                         | 1.3                       | 33                    | 713                   | 11                       | E                                    |

| <u>LAKE</u>                      | <u>COUNTY</u> | <u>LOCATION</u> | <u>YEARS OF<br/>RECORD</u> | <u>SECCHI</u> <sup>1</sup> | <u>TP</u> <sup>2</sup> | <u>TN</u> <sup>3</sup> | <u>CHL-A</u> <sup>4</sup> | <u>TROPHIC<br/>STATE</u> <sup>5</sup> |
|----------------------------------|---------------|-----------------|----------------------------|----------------------------|------------------------|------------------------|---------------------------|---------------------------------------|
| Big Lake                         | Holt          | 18/19, 61N, 39W | 1                          | 0.2                        | 328                    | 2,508                  | 166                       | HE                                    |
| Bilby Ranch Lake                 | Nodaway       | 13/24, 64N, 38W | 7                          | 1.1                        | 54                     | 1,055                  | 43                        | E                                     |
| Blind Pony Lake                  | Saline        | SE18, 49N, 22W  | 11                         | 0.7                        | 86                     | 1,279                  | 47                        | E                                     |
| Bowling Green Lake               | Pike          | 29, 53N, 2W     | 18                         | 1.9                        | 25                     | 534                    | 9                         | M                                     |
| Brookfield Lake                  | Linn          | 33, 58N, 19W    | 15                         | 1.2                        | 23                     | 616                    | 8                         | M                                     |
| *Busch W.A. #37                  | St. Charles   | 27, 46N, 2E     | 2                          | 1.1                        | 33                     | 540                    | 8                         | E                                     |
| Cameron Lake #3                  | Dekalb        | 9, 57N, 30W     | 1                          | 0.5                        | 86                     | 1,125                  | 21                        | E                                     |
| Cameron Lake #4<br>(Grindstone)  | Dekalb        | 5, 57N, 30W     | 1                          | 0.4                        | 196                    | 1,753                  | 22                        | HE                                    |
| Charity Lake                     | Atchison      | 32, 66N, 41W    | 2                          | 1.8                        | 36                     | 540                    | 16                        | E                                     |
| Lake Contrary                    | Buchanan      | 26, 57N, 36W    | 6                          | 0.3                        | 365                    | 3,060                  | 194                       | HE                                    |
| Crystal Lake                     | Ray           | 32, 53N, 29W    | 2                          | 0.6                        | 82                     | 918                    | 34                        | E                                     |
| *Daniel Boone Lake               | Shelby        | 31/32, 58N, 12W | 2                          | 0.2                        | 187                    | 1,424                  | 38                        | HE                                    |
| *Dean Lake                       | Chariton      | 3, 54N, 21W     | 1                          | 0.1                        | 382                    | 2,110                  | 5                         | HE                                    |
| Deer Ridge Lake                  | Lewis         | 18, 62N, 8W     | 17                         | 1.1                        | 44                     | 780                    | 16                        | E                                     |
| Edina Reservoir                  | Knox          | 12, 62N, 12W    | 10                         | 0.7                        | 70                     | 1,258                  | 24                        | E                                     |
| Ella Ewing Lake                  | Lewis         | 21, 64N, 10W    | 7                          | 0.6                        | 87                     | 1,393                  | 32                        | E                                     |
| Forest Lake                      | Adair         | 14, 62N, 16W    | 17                         | 1.4                        | 23                     | 411                    | 5                         | M                                     |
| Fox Valley Lake                  | Clark         | 27, 66N, 8W     | 6                          | 2.4                        | 18                     | 608                    | 8                         | M                                     |
| Green City Lake                  | Sullivan      | NE16, 63N, 18W  | 7                          | 0.6                        | 78                     | 1,052                  | 29                        | E                                     |
| Hamilton Lake                    | Caldwell      | 15, 57N, 28W    | 11                         | 0.8                        | 61                     | 968                    | 14                        | E                                     |
| Harrison County Lake             | Harrison      | 17/30, 65N, 28W | 7                          | 0.9                        | 54                     | 1,079                  | 44                        | E                                     |
| Hazel Creek Lake                 | Adair         | 31, 64N, 15W    | 12                         | 1.4                        | 29                     | 611                    | 8                         | M                                     |
| Henry Sever Lake                 | Knox          | 14, 60N, 10W    | 17                         | 0.9                        | 53                     | 1,059                  | 20                        | E                                     |
| Higginsville Lake                | Lafayette     | 9, 49N, 25W     | 17                         | 0.7                        | 100                    | 1,235                  | 24                        | E                                     |
| Hunnewell Lake                   | Shelby        | 25, 57N, 9W     | 17                         | 0.9                        | 46                     | 813                    | 22                        | E                                     |
| Indian Creek Lake                | Livingston    | 15/27, 59N, 25W | 5                          | 1.7                        | 23                     | 630                    | 12                        | M                                     |
| Jamesport Comm. Lake             | Daviess       | 20, 60N, 26W    | 1                          | 0.3                        | 139                    | 2,120                  | 141                       | HE                                    |
| *Jo Shelby Lake                  | Linn          | 36, 57N, 22W    | 2                          | 0.9                        | 70                     | 546                    | 37                        | E                                     |
| King Lake                        | Dekalb        | SW34, 61N, 32W  | 6                          | 0.2                        | 202                    | 1,756                  | 24                        | HE                                    |
| Kraut Run Lake<br>(Busch WA #33) | St. Charles   | 23, 46N, 2E     | 17                         | 0.5                        | 100                    | 1,119                  | 60                        | HE                                    |
| La Belle #2 Lake                 | Lewis         | NE16, 61N, 9W   | 5                          | 0.8                        | 66                     | 1,430                  | 51                        | E                                     |
| Lancaster New Lake               | Schuyler      | 23, 66N, 15W    | 4                          | 0.7                        | 74                     | 966                    | 36                        | E                                     |
| La Plata New Lake                | Macon         | 14, 60N, 14W    | 4                          | 1.3                        | 26                     | 790                    | 14                        | E                                     |
| Lawson City Lake                 | Ray           | 31, 54N, 29W    | 2                          | 0.8                        | 38                     | 975                    | 33                        | E                                     |
| Limpp Lake                       | Gentry        | 29, 61N, 32W    | 2                          | 0.3                        | 123                    | 1,995                  | 100                       | HE                                    |
| Lincoln Lake                     | Lincoln       | 8, 49N, 1E      | 17                         | 2.2                        | 18                     | 448                    | 5                         | M                                     |
| Little Dixie Lake                | Callaway      | 26, 48N, 11W    | 18                         | 0.7                        | 67                     | 806                    | 21                        | E                                     |
| Long Branch Lake                 | Macon         | 18, 57N, 14W    | 18                         | 0.7                        | 49                     | 835                    | 16                        | E                                     |
| Macon Lake                       | Macon         | 17, 57N, 14W    | 12                         | 0.8                        | 53                     | 899                    | 29                        | E                                     |
| Maple Leaf Lake                  | Lafayette     | 4, 48N, 26W     | 6                          | 1.1                        | 42                     | 878                    | 23                        | E                                     |
| Marceline City Lake              | Chariton      | 14, 56N, 19W    | 1                          | 2.2                        | 28                     | 710                    | 8                         | M                                     |
| Marceline Res.                   | Linn          | 28, 57N, 18W    | 11                         | 0.7                        | 105                    | 1,130                  | 45                        | E                                     |
| Lake Marie                       | Mercer        | 36, 66N, 24W    | 10                         | 2.7                        | 15                     | 445                    | 4                         | M                                     |
| Mark Twain Res.                  | Ralls         | 26, 55N, 7W     | 18                         | 1.1                        | 66                     | 1,293                  | 17                        | E                                     |
| Maysville Lake (NW)              | Dekalb        | 33, 59N, 31W    | 11                         | 0.6                        | 194                    | 1,331                  | 47                        | HE                                    |



| <u>LAKE</u>                      | <u>COUNTY</u> | <u>LOCATION</u> | <u>YEARS OF<br/>RECORD</u> | <u>SECCHI</u> <sup>1</sup> | <u>TP</u> <sup>2</sup> | <u>TN</u> <sup>3</sup> | <u>CHL-A</u> <sup>4</sup> | <u>TROPHIC<br/>STATE</u> <sup>5</sup> |
|----------------------------------|---------------|-----------------|----------------------------|----------------------------|------------------------|------------------------|---------------------------|---------------------------------------|
| Maysville Lake<br>(Redmond)      | Dekalb        | 3, 58N, 31W     | 1                          | 0.9                        | 68                     | 852                    | 26                        | E                                     |
| Memphis #1 Lake                  | Scotland      | 14, 65N, 12W    | 11                         | 0.6                        | 80                     | 1,257                  | 48                        | E                                     |
| Milan Lake (Elmwood)             | Sullivan      | 26, 63N, 20W    | 10                         | 0.8                        | 58                     | 789                    | 20                        | E                                     |
| Milan Lake (New)                 | Sullivan      | 35, 63N, 20W    | 10                         | 1.1                        | 41                     | 691                    | 13                        | E                                     |
| Monroe City Lake B               | Monroe        | 30, 56N, 7W     | 11                         | 0.5                        | 86                     | 1,143                  | 35                        | E                                     |
| Mozingo Lake                     | Nodaway       | 19, 65N, 34W    | 7                          | 1.4                        | 29                     | 832                    | 22                        | E                                     |
| Nehai Tonkayea Lake              | Chariton      | 11, 55N, 18W    | 9                          | 1.7                        | 19                     | 431                    | 3                         | M                                     |
| Nodaway Lake                     | Nodaway       | 20, 65N, 35W    | 7                          | 0.8                        | 42                     | 965                    | 22                        | E                                     |
| Old Kings Lake                   | Lincoln       | 25, 50N, 2E     | 1                          | 0.3                        | 278                    | 1,573                  | 80                        | HE                                    |
| Lake Paho                        | Mercer        | 25, 65N, 25W    | 11                         | 0.8                        | 48                     | 841                    | 14                        | E                                     |
| Pape Lake (Concordia)            | Lafayette     | 20, 48N, 24W    | 11                         | 0.6                        | 82                     | 1,085                  | 28                        | E                                     |
| Pony Express Lake                | Dekalb        | 33, 58N, 31W    | 11                         | 0.8                        | 69                     | 1,060                  | 33                        | E                                     |
| *Prairie Lake                    | St. Charles   | 39.708, -90.691 | 1                          | 0.7                        | 98                     | 790                    | 12                        | E                                     |
| *Prairie Slough                  | Lincoln       | 2/12, 51N, 2E   | 1                          | 0.2                        | 231                    | 2,495                  | 72                        | HE                                    |
| Ray Co. Lake                     | Ray           | 13, 52N, 28W    | 2                          | 0.4                        | 162                    | 1,960                  | 149                       | HE                                    |
| Rocky Fork Lake                  | Boone         | 31, 50N, 12W    | 8                          | 1.9                        | 23                     | 546                    | 7                         | M                                     |
| Rocky Hollow Lake<br>(Williams)  | Clay          | 33, 53N, 30W    | 9                          | 1.4                        | 55                     | 784                    | 21                        | E                                     |
| *Rothwell Lake                   | Randolph      | 3, 53N, 14W     | 3                          | 1.2                        | 52                     | 858                    | 30                        | E                                     |
| Lake St. Louis                   | St. Charles   | SW26, 47N, 2E   | 9                          | 0.5                        | 86                     | 1,171                  | 29                        | E                                     |
| Lake Ste. Louise                 | St. Charles   | SW27, 47N, 2E   | 3                          | 1.1                        | 31                     | 513                    | 6                         | M                                     |
| Savannah Lake                    | Andrew        | 7, 59N, 35W     | 2                          | 1.2                        | 44                     | 755                    | 22                        | E                                     |
| Shelbina Lake                    | Shelby        | 20, 57N, 10W    | 11                         | 0.6                        | 97                     | 1,054                  | 37                        | E                                     |
| Smithville Lake                  | Clay          | 13, 53N, 33W    | 18                         | 1.0                        | 33                     | 810                    | 17                        | E                                     |
| Spring Lake                      | Adair         | SW20, 61N, 16W  | 9                          | 1.2                        | 35                     | 533                    | 9                         | E                                     |
| Sterling Price Lake              | Chariton      | 17, 53N, 17W    | 8                          | 0.6                        | 104                    | 1490                   | 76                        | HE                                    |
| Sugar Creek Lake                 | Randolph      | 16, 54N, 14W    | 10                         | 0.8                        | 55                     | 757                    | 26                        | E                                     |
| Sugar Lake                       | Buchanan      | 27, 55N, 37W    | 6                          | 0.2                        | 333                    | 2,524                  | 173                       | HE                                    |
| *Swan Pond                       | Lincoln       | 39.101, -90.728 | 1                          | 0.3                        | 345                    | 1,658                  | 126                       | HE                                    |
| Thomas Hill Res.                 | Randolph      | 24, 55N, 16W    | 11                         | 0.7                        | 50                     | 769                    | 15                        | E                                     |
| Thunderhead Lake                 | Putnam        | 15, 66N, 19W    | 12                         | 0.8                        | 50                     | 971                    | 17                        | E                                     |
| Unionville New Lake<br>(Mahoney) | Putnam        | 27, 66N, 19W    | 13                         | 0.6                        | 95                     | 1,207                  | 39                        | E                                     |
| Vandalia Lake                    | Pike          | 12, 53N, 5W     | 12                         | 1.0                        | 74                     | 994                    | 38                        | E                                     |
| Lake Viking                      | Daviess       | 9, 59N, 28W     | 16                         | 1.4                        | 27                     | 526                    | 10                        | M                                     |
| Wakonda Lake                     | Lewis         | NE13, 60N, 6W   | 6                          | 0.8                        | 95                     | 1,186                  | 51                        | E                                     |
| Watkins Mill Lake                | Clay          | 22, 53N, 30W    | 17                         | 0.9                        | 41                     | 635                    | 18                        | E                                     |
| Waukomis Lake                    | Platte        | 17, 51N, 33W    | 10                         | 1.7                        | 25                     | 592                    | 14                        | E                                     |
| Weatherby Lake                   | Platte        | 15, 51N, 34W    | 3                          | 2                          | 20                     | 403                    | 5                         | M                                     |
| Whiteside Lake                   | Lincoln       | 39.174, -91.011 | 2                          | 2.5                        | 20                     | 630                    | 6                         | M                                     |
| Willow Brook Lake                | Dekalb        | 4, 58N, 31W     | 5                          | 0.7                        | 82                     | 1,161                  | 50                        | E                                     |
| Worth Co. Lake                   | Worth         | 29/32, 65N, 32W | 2                          | 0.6                        | 77                     | 1,435                  | 60                        | E                                     |
| <u>OSAGE PLAINS</u>              |               |                 |                            |                            |                        |                        |                           |                                       |
| Amarugia Highlands Lake          | Cass          | 10, 43N, 32W    | 7                          | 1.0                        | 54                     | 696                    | 11                        | E                                     |
| Atkinson Lake                    | St. Clair     | 6, 37N, 28W     | 17                         | 0.5                        | 77                     | 1,019                  | 39                        | E                                     |
| Blue Springs Lake                | Jackson       | 3, 48N, 31W     | 6                          | 1.0                        | 36                     | 557                    | 18                        | E                                     |
| Bushwhacker Lake                 | Vernon        | 27, 34N, 32W    | 4                          | 1.6                        | 28                     | 622                    | 14                        | M                                     |
| Butler Lake                      | Bates         | 14, 40N, 32W    | 5                          | 0.7                        | 67                     | 941                    | 33                        | E                                     |

| <u>LAKE</u>            | <u>COUNTY</u>  | <u>LOCATION</u> | <u>YEARS OF<br/>RECORD</u> | <u>SECCHI</u> <sup>1</sup> | <u>TP</u> <sup>2</sup> | <u>TN</u> <sup>3</sup> | <u>CHL-A</u> <sup>4</sup> | <u>TROPHIC<br/>STATE</u> <sup>5</sup> |
|------------------------|----------------|-----------------|----------------------------|----------------------------|------------------------|------------------------|---------------------------|---------------------------------------|
| Catclaw Lake           | Jackson        | 14, 47N, 31W    | 2                          | 0.2                        | 126                    | 862                    | 4                         | E                                     |
| Coot Lake              | Jackson        | 22, 47N, 31W    | 2                          | 0.7                        | 50                     | 856                    | 10                        | E                                     |
| Cottontail Lake        | Jackson        | 14, 47N, 31W    | 2                          | 0.2                        | 140                    | 946                    | 15                        | E                                     |
| *Four Rivers CA Lake   | Vernon         | 4, 37N, 31W     | 1                          | 1.0                        | 34                     | 460                    | 7                         | M                                     |
| Gopher Lake            | Jackson        | 23, 47N, 31W    | 2                          | 0.4                        | 94                     | 776                    | 17                        | E                                     |
| Harmony Mission Lake   | Bates          | 15, 38N, 32W    | 7                          | 1.2                        | 49                     | 852                    | 24                        | E                                     |
| Lake Harrisonville     | Cass           | 26, 46N, 31W    | 8                          | 0.9                        | 51                     | 940                    | 18                        | E                                     |
| Hazel Hill Lake        | Johnson        | 28, 47N, 26W    | 6                          | 0.7                        | 54                     | 1,032                  | 36                        | E                                     |
| Holden City Lake       | Johnson        | 7, 45N, 27W     | 6                          | 0.8                        | 48                     | 990                    | 16                        | E                                     |
| Jackrabbit Lake        | Jackson        | 15, 47N, 31W    | 2                          | 0.2                        | 168                    | 783                    | 14                        | HE                                    |
| Lake Jacomo            | Jackson        | 11, 48N, 31W    | 9                          | 1.3                        | 34                     | 574                    | 19                        | E                                     |
| Lamar Lake             | Barton         | 32, 32N, 30W    | 11                         | 0.8                        | 80                     | 997                    | 46                        | E                                     |
| Lone Jack Lake         | Jackson        | 14, 47N, 30W    | 2                          | 2.0                        | 26                     | 600                    | 15                        | M                                     |
| Longview Lake          | Jackson        | 20, 47N, 32W    | 9                          | 0.8                        | 36                     | 746                    | 12                        | E                                     |
| Lotawana Lake          | Jackson        | 29, 48N, 30W    | 9                          | 1.4                        | 33                     | 680                    | 19                        | E                                     |
| Montrose Lake          | Henry          | 33, 41N, 27W    | 9                          | 0.3                        | 187                    | 1,283                  | 64                        | HE                                    |
| Nell Lake              | Jackson        | 15, 47N, 31W    | 2                          | 0.6                        | 68                     | 834                    | 10                        | E                                     |
| North Lake             | Cass           | 28, 45N, 31W    | 17                         | 0.7                        | 96                     | 1,010                  | 42                        | E                                     |
| Odessa Lake            | Lafayette      | 15, 48N, 28W    | 3                          | 1.4                        | 39                     | 852                    | 22                        | E                                     |
| Prairie Lee Lake       | Jackson        | 27, 48N, 31W    | 9                          | 0.8                        | 56                     | 903                    | 26                        | E                                     |
| Raintree Lake          | Cass           | 6, 46N, 31W     | 17                         | 0.6                        | 59                     | 930                    | 15                        | E                                     |
| Spring Fork Lake       | Pettis         | 21, 44N, 21W    | 11                         | 0.6                        | 154                    | 1,126                  | 47                        | HE                                    |
| Lake Tapawingo         | Jackson        | 34, 49N, 31W    | 8                          | 1.3                        | 34                     | 842                    | 32                        | E                                     |
| *Tebo Lake             | Pettis         | 12, 44N, 22W    | 6                          | 2.8                        | 18                     | 609                    | 4                         | M                                     |
| (Westmoreland)         |                |                 |                            |                            |                        |                        |                           |                                       |
| Winnebago Lake         | Cass           | 9, 46N, 31W     | 10                         | 0.9                        | 50                     | 842                    | 20                        | E                                     |
| <u>OZARK BORDER</u>    |                |                 |                            |                            |                        |                        |                           |                                       |
| *Ashland Lake          | Boone          | 19, 46N, 11W    | 1                          | 0.6                        | 119                    | 1,684                  |                           | HE                                    |
| *Bella Vista Lake      | Cape Girardeau | 2/11, 32N, 13E  | 7                          | 1.4                        | 24                     | 542                    | 11                        | M                                     |
| Binder Lake            | Cole           | 36, 45N, 13W    | 17                         | 1.0                        | 56                     | 771                    | 25                        | E                                     |
| *Boutin Lake           | Cape Girardeau | 15, 32N, 14E    | 6                          | 1.5                        | 23                     | 558                    | 8                         | M                                     |
| Creve Couer Lake       | St. Louis      | 20, 46N, 5E     | 8                          | 0.3                        | 152                    | 1,064                  | 58                        | HE                                    |
| *D.C. Rogers Lake      | Howard         | 3, 50N, 16W     | 10                         | 1.3                        | 32                     | 542                    | 7                         | M                                     |
| Eureka Lake            | St. Louis      | NE31, 44N, 4E   | 1                          | 0.8                        | 48                     | 830                    | 14                        | E                                     |
| Fayette Lake #2        | Howard         | 4, 50N, 16W     | 7                          | 0.9                        | 52                     | 877                    | 23                        | E                                     |
| Lake Forest (Lake Ann) | St. Genevieve  | 36, 38N, 7E     | 10                         | 1.3                        | 43                     | 649                    | 22                        | E                                     |
| Lake Girardeau         | Cape Girardeau | 9, 30N, 11E     | 7                          | 0.9                        | 66                     | 945                    | 45                        | E                                     |
| Glover Spring Lake     | Callaway       | 13, 47N, 9W     | 7                          | 1.2                        | 67                     | 863                    | 22                        | E                                     |
| Goose Creek Lake       | St. Francois   | 26, 38N, 6E     | 11                         | 2.3                        | 14                     | 388                    | 4                         | M                                     |
| Manito Lake            | Moniteau       | 8/9, 44N, 17W   | 6                          | 0.7                        | 90                     | 948                    | 14                        | E                                     |
| Lake Northwoods        | Gasconade      | 33, 43N, 5W     | 12                         | 1.2                        | 24                     | 448                    | 5                         | M                                     |
| Perry Co. Lake         | Perry          | 22, 35N, 10E    | 8                          | 0.8                        | 79                     | 1,034                  | 43                        | E                                     |
| Pinewoods Lake         | Carter         | 7, 26N, 3E      | 5                          | 1.4                        | 36                     | 765                    | 20                        | E                                     |
| Pinnacle Lake          | Montgomery     | 24, 47N, 5W     | 6                          | 2.7                        | 22                     | 454                    | 5                         | M                                     |
| Simpson Park Lake      | St. Louis      | 16, 44, 5E      | 1                          | 0.7                        | 111                    | 987                    | 32                        | HE                                    |
| Timberline Lake        | St. Francois   | 23, 38N, 4E     | 10                         | 4.2                        | 9                      | 299                    | 2                         | O                                     |
| Lake Tishomingo        | Jefferson      | 5, 41N, 4E      | 10                         | 2                          | 22                     | 495                    | 6                         | M                                     |

| <u>LAKE</u>                           | <u>COUNTY</u> | <u>LOCATION</u> | <u>YEARS OF<br/>RECORD</u> | <u>SECCHI<sup>1</sup></u> | <u>TP<sup>2</sup></u> | <u>TN<sup>3</sup></u> | <u>CHL-A<sup>4</sup></u> | <u>TROPHIC<br/>STATE<sup>5</sup></u> |
|---------------------------------------|---------------|-----------------|----------------------------|---------------------------|-----------------------|-----------------------|--------------------------|--------------------------------------|
| *Tri-City Comm. Lake                  | Boone         | 24, 51N, 12W    | 10                         | 0.8                       | 57                    | 865                   | 20                       | E                                    |
| Tywappity Lake                        | Scott         | 8, 29N, 13E     | 6                          | 0.9                       | 50                    | 1,005                 | 36                       | E                                    |
| Wanda Lee Lake                        | St. Genevieve | 2, 37N, 7E      | 10                         | 1.3                       | 56                    | 577                   | 26                       | E                                    |
| Lake Wappapello                       | Wayne         | 3, 26N, 3E      | 17                         | 0.9                       | 38                    | 520                   | 24                       | E                                    |
| Lake Wauwanoka                        | Jefferson     | 1, 40N, 4E      | 10                         | 2.8                       | 14                    | 613                   | 3                        | M                                    |
| <u>OZARK HIGHLANDS</u>                |               |                 |                            |                           |                       |                       |                          |                                      |
| Austin Lake                           | Texas         | 30, 29N, 11W    | 9                          | 1.7                       | 20                    | 513                   | 6                        | M                                    |
| *Bismarck Lake                        | St. Francois  | 19, 35N, 4E     | 6                          | 1.7                       | 21                    | 381                   | 6                        | M                                    |
| Bull Shoals Lake                      | Taney         | 21-23N, 15-20W  | 8                          | 2.2                       | 18                    | 360                   | 8                        | M                                    |
| *Lake Capri                           | St. Francois  | 30, 37N, 4E     | 17                         | 4.6                       | 7                     | 289                   | 2                        | O                                    |
| *Lake Carmel                          | St. Francois  | 18, 37N, 4E     | 12                         | 2.8                       | 10                    | 311                   | 3                        | O                                    |
| Clearwater Lake                       | Reynolds      | 6, 28N, 3E      | 17                         | 1.9                       | 14                    | 225                   | 6                        | M                                    |
| Council Bluff Lake                    | Iron          | 23, 35N, 1E     | 17                         | 3.2                       | 8                     | 237                   | 2                        | O                                    |
| Crane Lake                            | Iron          | 33, 32N, 4E     | 7                          | 1.2                       | 14                    | 252                   | 4                        | M                                    |
| Fellows Lake                          | Greene        | 22, 30N, 21W    | 17                         | 2.7                       | 14                    | 359                   | 5                        | M                                    |
| Fourche Lake                          | Ripley        | 22, 23N, 1W     | 11                         | 3.4                       | 10                    | 245                   | 3                        | O                                    |
| Fredericktown City Lake               | Madison       | 6, 33N, 7E      | 9                          | 0.7                       | 66                    | 764                   | 33                       | E                                    |
| H.S. Truman Lake                      | Benton        | 7, 40N, 23W     | 17                         | 1.2                       | 42                    | 857                   | 16                       | E                                    |
| Indian Hills Lake                     | Crawford      | 23, 39N, 5W     | 12                         | 1.0                       | 36                    | 640                   | 18                       | E                                    |
| Lake Killarney                        | Iron          | 1, 33N, 4E      | 7                          | 0.8                       | 64                    | 627                   | 30                       | E                                    |
| *Lafitte Lake                         | St. Francois  | 28, 37N, 4E     | 1                          | 4.4                       | 6                     | 320                   | 2                        | O                                    |
| *Little Prairie Lake                  | Phelps        | 21, 38N, 7W     | 17                         | 1.0                       | 29                    | 491                   | 9                        | M                                    |
| Loggers Lake                          | Dent          | 10, 31N, 3W     | 6                          | 3.1                       | 10                    | 237                   | 4                        | M                                    |
| Lower Taum Sauk                       | Reynolds      | 33, 33N, 2E     | 9                          | 2.1                       | 12                    | 196                   | 4                        | M                                    |
| Macs Lake (Ziske)                     | Dent          | NE17, 34N, 5W   | 7                          | 1.6                       | 24                    | 598                   | 20                       | E                                    |
| *Lake Marseilles                      | St. Francois  | 29, 37N, 4E     | 9                          | 3.7                       | 10                    | 352                   | 2                        | O                                    |
| McDaniel Lake                         | Greene        | 26, 30N, 22W    | 16                         | 1.4                       | 33                    | 476                   | 18                       | E                                    |
| *Miller Lake                          | Carter        | 1, 27N, 1E      | 9                          | 1.5                       | 19                    | 484                   | 7                        | M                                    |
| Monsanto Lake<br>(St. Joe State Park) | St. Francois  | 20, 36N, 5E     | 10                         | 2.2                       | 10                    | 378                   | 2                        | O                                    |
| Noblett Lake                          | Douglas       | 25, 26N, 11W    | 7                          | 2.7                       | 17                    | 250                   | 4                        | M                                    |
| Norfork Lake                          | Ozark         | 21N, 12W        | 6                          | 1.7                       | 23                    | 631                   | 6                        | M                                    |
| Lake of the Ozarks<br>(Lower)         | Miller        | 19, 40N, 15W    | 16                         | 2.0                       | 29                    | 598                   | 15                       | E                                    |
| Peaceful Valley                       | Gasconade     | 25, 42N, 6W     | 11                         | 1.4                       | 37                    | 850                   | 30                       | E                                    |
| Pomme de Terre Lake                   | Hickory       | 2, 36N, 22W     | 18                         | 1.8                       | 28                    | 568                   | 15                       | E                                    |
| *Pomona Lake                          | Howell        | 26, 26N, 9W     | 1                          | --                        | 50                    | 605                   | 10                       | E                                    |
| Ripley Co. Lake                       | Ripley        | 10, 23N, 1E     | 7                          | 1.5                       | 32                    | 787                   | 26                       | E                                    |
| Roby Lake                             | Texas         | 3, 32N, 11W     | 8                          | 2.1                       | 18                    | 431                   | 5                        | M                                    |
| Shawnee Lake (Turner)                 | Dent          | NW17, 34N, 5W   | 7                          | 1.7                       | 28                    | 583                   | 22                       | E                                    |
| Lake Shayne                           | Washington    | 25, 37N, 3E     | 16                         | 2.9                       | 7                     | 277                   | 1                        | O                                    |
| Sims Valley Lake                      | Texas         | 17, 27N, 8W     | 9                          | 1.1                       | 26                    | 498                   | 13                       | M                                    |
| Lake Springfield                      | Greene        | 20, 61N, 16W    | 8                          | 0.9                       | 58                    | 1,005                 | 20                       | E                                    |
| Stockton Lake                         | Cedar         | 15, 34N, 26W    | 18                         | 2.8                       | 14                    | 460                   | 7                        | M                                    |
| Sunnen Lake                           | Washington    | 4, 37N, 1E      | 13                         | 2.7                       | 12                    | 282                   | 4                        | M                                    |
| Table Rock Lake                       | Stone         | 22, 22N, 22W    | 16                         | 3.3                       | 11                    | 388                   | 5                        | M                                    |
| Lake Taneycomo                        | Taney         | 8, 23N, 20W     | 7                          | 3.3                       | 23                    | 787                   | 3                        | M                                    |

| <u>LAKE</u>                  | <u>COUNTY</u> | <u>LOCATION</u> | <u>YEARS OF<br/>RECORD</u> | <u>SECCHI</u> <sup>1</sup> | <u>TP</u> <sup>2</sup> | <u>TN</u> <sup>3</sup> | <u>CHL-A</u> <sup>4</sup> | <u>TROPHIC<br/>STATE</u> <sup>5</sup> |
|------------------------------|---------------|-----------------|----------------------------|----------------------------|------------------------|------------------------|---------------------------|---------------------------------------|
| <u>SOUTHEASTERN LOWLANDS</u> |               |                 |                            |                            |                        |                        |                           |                                       |
| Big Oak Tree S.P. Lake       | Mississippi   | 14, 23N, 16E    | 2                          | 0.6                        | 44                     | 530                    | 12                        | E                                     |
| Upper Big Lake               | Mississippi   | 25, 27N, 16E    | 2                          | 0.3                        | 338                    | 2,050                  | 181                       | HE                                    |

<sup>1</sup>Secchi depth (m)

<sup>2</sup>Total Phosphorus (µg/L)

<sup>3</sup>Total Nitrogen (µg/L)

<sup>4</sup>Chlorophyll A (µg/L)

<sup>5</sup>Trophic State: O=Oligotrophic, M=Mesotrophic, E=Eutrophic, HE=Hypereutrophic

\*Unclassified Lake

Trophic status correlates strongly with physiographic regions of the state. In agricultural northern and western Missouri, most lakes of known trophic state are eutrophic, while in the Ozarks and Ozark border regions, trophic states are more equally divided between eutrophic and either mesotrophic or oligotrophic lakes. Most known hypereutrophic lakes are in glaciated northern Missouri, while nearly all oligotrophic lakes are in unglaciated, highly weathered Ozark terrain.

The method presently used by the state to determine trophic status was derived from the work by Wetzel, R.G., 1975; "Limnology," Table 14-11; and from Vollenweider, R.A. and J.J. Kerekes, 1980. EPA440/5-81-010; "Restoration of Lakes and Inland Waters." The criteria are shown in the table below.

Table 10. Definition Of Trophic Classification.

| Trophic Class  | Chlorophyll-A<br>(ug/l) | Total phosphorus<br>(ug/l) |
|----------------|-------------------------|----------------------------|
| Oligotrophic   | <3                      | <10                        |
| Mesotrophic    | 3-10                    | 10-30                      |
| Eutrophic      | 11-56                   | 31-100                     |
| Hypereutrophic | >56                     | >100                       |

#### Controlling Pollution in Lakes

In Missouri, agriculture is considered the primary source of nonpoint source pollution, although urban areas represent a very significant source, as do abandoned mine lands. The department works to implement effective and appropriate Best Management Practices in the watersheds of impaired lakes and reservoirs.

In-lake management techniques that were previously funded under Section 314 can now be funded under Section 319 in the context of an appropriate Nonpoint Source (NPS) project. Several in-lake management techniques are eligible for Section 319 funding, including water level drawdown, shading and sediment covers, biological controls such as fish or insects, and planting or harvesting of aquatic plants.

In addition, the department conducts and helps fund monitoring on lakes throughout Missouri. This includes statewide lake assessments and volunteer lake monitoring that is now funded through Section 319. For example, the University of Missouri-Columbia's Statewide Lake Assessment Program evaluates approximately 100 lakes each

year. The program began collecting annual samples in 1989, with some samples taken as far back as 1978.

The 319 Program supplies grants to improve lakes, such as projects that provide information and education. The department also works with several watershed groups on a regular basis. There are at least 76 watershed groups in Missouri. These groups work to educate and inform residents and landowners in their watershed about techniques they can use to minimize nonpoint source pollution.

The department's Soil and Water Conservation Program also helps Missouri's agricultural landowners conserve soil and water resources through several incentive programs, which are funded by a statewide sales tax. These programs include the Cost-Share Program, Loan Interest-Share Program and Agricultural Nonpoint Source Special Area Land Treatment Program (AgNPS SALT). Practices offered for cost-share reduce soil erosion by a variety of methods that may include increasing crop residue, improving vegetation, diversion or containment of water to facilitate slower release, protection of stream bank and forested areas from livestock, and reduction of wind erosion. Cost-share and other incentives are also available through the Natural Resources Conservation Service. AgNPS SALT projects focus on decreasing agricultural nonpoint source pollution and usually encompass watersheds averaging 50,000 acres in size. There are 68 active SALTs. Of the 13 that have been completed, five focused primarily on protecting lakes in the watershed. The Missouri Department of Conservation also has programs and information to help Missourians manage private lakes.

Total Maximum Daily Loads also help to reduce pollution in Missouri lakes and reservoirs. One hundred and five TMDL studies have been completed since the beginning of the program in 1999. Six of these were for lakes, and focused primarily on reducing nonpoint source pollution entering the lake. Appendix II shows the proposed schedule to complete needed TMDLs.

## **STATUS OF WETLANDS**

Originally about 4.8 million acres (10.7 percent of the land surface of the state) in Missouri were wetlands. By 1992, it was estimated that less than 480,000 acres remained. Several state and federal programs have recognized the need to preserve and enhance our remaining wetlands.

The department's Water Resources Center administers the State Wetlands Conservation Plan, which encourages the protection and restoration of wetlands, and provides technical assistance to other agencies involved in wetland issues. With the help of state and federal agencies, the department has completed several projects, including studies assessing urban wetlands, identifying types of wetlands through image analysis, and determining the hydrology of Missouri riparian wetlands. Currently the department and its partners are working to assess specific wetland mitigation sites, locate small headwater wetlands in agricultural areas, and establish a dollar value for wetlands under past, present and future conditions.

The Missouri Department of Conservation currently has 12 large intensively managed wetlands composed of approximately 26,000 acres. From 1998 to 2003, MDC purchased 23,186 acres of wetlands and restored an additional 32,662 acres.

In 1994, the U.S. Fish and Wildlife Service began the process of acquiring land from willing sellers in the Missouri River floodplain for a national wildlife refuge called Big Muddy. The project authorizes the purchase of up to 60,000 acres in 25 to 30 units between Kansas City and St. Louis. The refuge currently consists of 10,400 acres of land in eight units. Although access is limited at some units, all are publicly accessible. The refuge focuses on restoring several kinds of riverine and floodplain habitat, allowing lands to interact naturally with the river and act as seasonal wetlands.

The Natural Resources Conservation Service Wetlands Reserve Program, begun in 1992, purchases easements of wetlands and provides funds for restoration of those wetlands. There are presently 790 easements covering 116,839 acres in place in Missouri.

Together MDC, USFWS and NRCS have protected more than 140,000 acres through easements or purchases, restored more than 43,000 acres, and enhanced more than 41,000 acres of wetlands in Missouri.

Three Web sites providing information on Missouri's wetlands and efforts to restore wetlands are given below:

<http://www.dnr.mo.gov/env/wrc/wetlands.htm>

<http://www.mdc.mo.gov/landown/wetland/wetmng>

<http://www.nrcs.usda.gov/programs/wrp/states/mo.html>

## **CHAPTER 4. GROUNDWATER ASSESSMENT**

### **BACKGROUND**

Less than half of Missourians rely on groundwater as the source of their drinking water. Groundwater is the major source of drinking water in the Ozarks and the Southeast Lowlands for both public and private supplies. The cities of St. Joseph, Independence, Columbia and St. Charles use groundwater adjacent to the Missouri River. In the plains region of the state, many small communities are able to obtain adequate water from shallow alluvial wells near rivers or large creeks, and many individual households still rely on the upland shallow aquifer even though it yields only very small amounts of water.

In the Ozarks, groundwater yields are usually large and of excellent quality, as witnessed by the fact that unlike cities in other areas of the state, many municipalities pump groundwater directly into their water supplies without treatment. However, the geologic character of the Ozarks that supplies it with such an abundance of groundwater, namely its ability to funnel large amounts of rainfall and surface runoff to the groundwater system, can present problems for groundwater quality. This is because much surface water flows directly to groundwater through cracks, fractures or solution cavities in the bedrock, with little or no filtration. Contaminants from leaking septic tanks or storage tanks, or surface waters affected by domestic wastewater, animal feedlots and other pollution sources can move directly into groundwater through these cavities in the bedrock.

As in the Ozarks, groundwater in the southeast lowlands is abundant and of good quality. Unlike the Ozarks, contaminants are filtered by thick deposits of sand, silt and clay as they move through the groundwater system. Thus, while shallow groundwater wells are subject to the same problems with elevated levels of nitrate or bacteria as are found locally in the Ozark aquifer and can also have low levels of pesticides, deep wells are generally unaffected by contaminants.

Shallow groundwater in the plains of northern and western Missouri tends to be somewhat more mineralized and to have taste and odor problems due to high levels of iron and manganese. Like shallow wells in the southeast lowlands, wells in this part of the state can be affected by nitrates, bacteria or pesticides.

In urban areas, alluvial aquifers of large rivers such as the Missouri and the Meramec that serve water supplies have occasionally been locally contaminated by spills or improper disposal of industrial or commercial chemicals.

### **WELL CONSTRUCTION AND GROUNDWATER QUALITY**

Well water quality is greatly influenced by well construction. Public drinking water wells and many private wells are deep, and properly cased and grouted. These wells rarely become contaminated. However, many private wells are shallow or not properly cased. These wells can be easily contaminated by septic tanks, feedlots or chemical mixing sites near the well. Studies in Missouri have shown that two-thirds of wells contaminated by pesticides are less than 35 feet deep. The three most common problems in private wells are bacteria, nitrate and pesticides. Groundwater studies in Missouri indicate that about 30 percent of private wells occasionally exceed drinking water standards for bacteria, 30 percent for nitrate and about five percent for pesticides. State regulations include standards for construction and wellhead protection for all new wells.

### **MAJOR POTABLE AQUIFERS IN MISSOURI**

The location of the major aquifers providing drinkable water in Missouri are described below. The unconfined aquifers are those under water table conditions (the pressure at the water table is the atmospheric pressure). These unconfined aquifers tend to yield greater amounts of water, but are also more easily contaminated by activities occurring at the land surface. In confined aquifers, the upper level of the saturated zone is restricted so that the pressure level is greater than exists at that level of saturation. Confined aquifers are generally recharged more slowly than unconfined aquifers but are better protected from surface contaminants.

### Glacial Till Aquifer

This aquifer covers most of Missouri north of the Missouri River. Glacial till is an unsorted mixture of clay, sand and gravel, with occasional boulders and lenses of sand or gravel. Loess, fine wind-blown silt deposits four to eight feet in depth, cover the till on the uplands. In places, the till is underlain by sorted deposits of sand or gravel. Although this aquifer is unconfined, surface water infiltrates very slowly and groundwater yields are very small. In scattered areas the till has buried old river channels that remain as large sand or gravel deposits that contain much more groundwater than the till.

Some households still rely on this aquifer for drinking water, but it is generally inadequate as a source for municipal water supply.

### Alluvial Aquifer

Alluvial aquifers are the unconfined aquifers on floodplains of rivers and are of Quaternary age. In Missouri, the largest of these aquifers lie along the Missouri and Mississippi rivers, reaching their widest extent in the southeast lowlands where they extend for as much as 50 miles west of the Mississippi River. Many small communities north of the Missouri River use the alluvial aquifers of nearby streams for their drinking water supply, and the Missouri River alluvium supplies the cities of St. Joseph, Independence and Columbia and sections of St. Charles County. In the southeast lowlands, most private water supplies and about 45 percent of people served by public water supplies use water from the alluvial aquifer. Agricultural irrigation consumes about five times more water in this area of Missouri than does domestic water use. All agricultural irrigation water is drawn from the alluvial aquifer.

### Wilcox-McNairy Aquifer

These two aquifers lie beneath much of the alluvial aquifer of the southeast lowlands. They are in unconsolidated or loosely consolidated deposits of marine sands and clays of Tertiary and Cretaceous age. Except where the McNairy aquifer outcrops in the Benton Hills and along Crowley's Ridge, these aquifers are confined. They yield abundant amounts of good quality water, and they provide the water for 55 percent of people served by public supplies. In the southeastern part of this region, the deeper of these aquifers, the McNairy, becomes too mineralized to be used for drinking water supply. These two aquifers appear to be unaffected by contaminants of human origin.

### Ozark-St. Francis Aquifer

This aquifer covers most of the southern and central two-thirds of Missouri. It is composed of dolomites and sandstones of Ordovician and Cambrian age. Most of the aquifer is unconfined. This aquifer is used for almost all public and private drinking water supplies in this area of Missouri. Exceptions would include supplies in the St. Francis Mountains, such as Fredericktown and Ironton, where the aquifer has been lost due to geologic uplift and erosion, and in Springfield, where demand is so heavy that groundwaters are supplemented with water from three large reservoirs and the James River.

Yields and water quality are typically very good, but in many areas, the bedrock is highly weathered, contains many solution cavities, and can transmit contaminated surface waters into the groundwater rapidly with little or no filtration. Where the confined portion of the aquifer is overlain only by the Mississippian limestones of the Springfield aquifer, the confined Ozark aquifer continues westward for 80 miles or more as a potable water supply, serving the communities of Pittsburg, Kansas and Miami, Oklahoma. However, where it is also overlain by less permeable Pennsylvanian bedrock, the confined Ozark becomes too mineralized for drinking within 20 to 40 miles.

The unconfined Ozark-St. Francis aquifer is susceptible to contamination from surface sources. Increasing urbanization and increasing numbers of livestock are threats to the integrity of portions of this valuable aquifer.



### Springfield Aquifer

This aquifer covers a large portion of southwestern Missouri. It is composed of Mississippian limestones that are, particularly in the eastern portion of the aquifer, highly weathered. The aquifer is unconfined and surface water in many areas is readily transmitted to groundwater. Urbanization and livestock production affect this aquifer. Elevated nitrates and bacterial contamination are common problems in groundwaters of the Springfield aquifer.

### **GROUNDWATER QUALITY SUMMARY TABLES**

Table 11 lists the major sources of groundwater contamination in Missouri, major contaminants, and reasons why these sources are the most important. Table 11 summarizes groundwater quality problems at hazardous waste sites. Tables 12 and 13 provide information on levels of nitrate, pesticides and other toxic organics in public drinking water wells and Table 14 gives the present status of Missouri's groundwater protection strategy.

Table 11. Major Sources Of Groundwater Contamination.

| Contaminant Source                      | 10 Highest Priority Sources (X) <sup>1</sup> | Significant Risk Factors <sup>2</sup> | Contaminants <sup>3</sup> |
|---|--|---------------------------------------|---------------------------|
| <b>Agricultural Activities</b>          |  |                                       |                           |
| Agricultural chemical facilities        |  |                                       |                           |
| Animal feedlots                         |  |                                       |                           |
| Drainage wells                          |  |                                       |                           |
| Fertilizer applications                 | X  | A,C,D,E                               | A                         |
| Irrigation practices                    |  |                                       |                           |
| Pesticide applications                  | X  | A,B,C,D,E                             | B                         |
| <b>Storage and Treatment Activities</b> |  |                                       |                           |
| Land application                        | X  | A,D,E                                 | A,C                       |
| Material stockpiles                     |  |                                       |                           |
| Storage tanks (above ground)            |  |                                       |                           |
| Storage tanks (underground)             | X  | A,B,C,D,E                             | D                         |
| Surface impoundments                    |  |                                       |                           |
| Waste piles                             |  |                                       |                           |
| Waste tailings                          |  |                                       |                           |
| <b>Disposal Activities</b>              |  |                                       |                           |
| Deep injection wells                    |  |                                       |                           |
| Landfills                               |  |                                       |                           |
| Septic systems                          | X  | A,D,E                                 | A,C                       |
| Shallow injection wells                 |  |                                       |                           |

| <b>Other</b>                   |   |         |         |
|--------------------------------|---|---------|---------|
| Hazardous waste generators     |   |         |         |
| Hazardous waste sites          | X | A,B,C,D | B,E,F,G |
| Industrial facilities          | X | A,B,C,E | A,H,I,J |
| Material transfer operations   |   |         |         |
| Mining and mine drainage       | X | A,E     | F       |
| Pipelines and sewer lines      |   |         |         |
| Salt storage and road salting  |   |         |         |
| Salt water intrusion           | X | C       | K       |
| Spills                         | X | A,B,C,E | B,D,E,H |
| Transportation of materials    |   |         |         |
| Urban runoff                   |   |         |         |
| Other sources (please specify) |   |         |         |
| Other sources (please specify) |   |         |         |

1 Not in Priority Order

2 A. Human health or environmental toxicity risk

B. Size of population at risk

C. Location of sources relative to drinking water sources

D. Number and/or size of contaminant sources

E. Hydrogeologic sensitivity

3 A. Nitrate

B. Organic Pesticides

C. Pathogens (Bacteria, Protozoa, Viruses)

D. Petroleum Compounds

E. Halogenated Solvents

F. Metals

G. Radionuclides

H. Ammonia

I. Pentachlorophenol

J. Dioxin

K. Salinity/Brine

Table 12. Groundwater Contamination Summary.

Hydrogeologic Setting: All Aquifers

Data Reporting Period: 2004-2005

| Source Type                     | Number of sites | Number of sites that are listed and/or have confirmed releases | Number with confirmed groundwater contamination | Contaminants* | Number of site investigations (optional) | Number of sites that have been stabilized or have had the source removed (optional) | Number of sites with corrective action plans (optional) | Number of sites with active remediation (optional) | Number of sites with cleanup completed (optional) |
|---------------------------------|-----------------|--|---|---------------|--|---|---|--|---|
| NPL                             | 26              | 26   | 26  | 1             | 26                                       | --  | --  | --   | --  |
| CERCLIS (non-NPL)               | 452             | 452  | 38  | 1             | 38                                       | --  | --  | --   | --  |
| DOD/DOE                         | 117             | 34   | 32  | 2             | 33                                       | 2   | 11  | 10   | 31  |
| LUST                            | 3,757           | 295  | 87  | 3             | 61                                       | 286   | --  | 1,589  | 286   |
| RCRA Corrective Action          | 96              | 92   | 52  | 1,2,3,4       | 51                                       | 41  | 30  | 25   | 20  |
| Underground Injection           |                 |  |   |               |  |   |   |  |   |
| State Sites                     | 325             | 325  | 126   | 1,2,3,4       | 325                                      | 134   | 134   | 42   | 134   |
| Nonpoint Sources <sup>(5)</sup> |                 |  |   |               |  |   |   |  |   |
| Other (specify)                 |                 |  |   |               |  |   |   |  |   |

NPL - National Priority List , DOE- Department of Energy ; DOD- Department of Defense; CERCLIS - Comprehensive Environmental Response, Compensation, and Liability Information System; LUST - Leaking Underground Storage Tanks; RCRA - Resource Conservation and Recovery Act.

\* Contaminants

1 - VOAs, SVOAs, Solvents, PCBs, Dioxin, PAHs, Herbicides, Pesticides, Metals, Explosives

2 - VOA, PCB, Pesticides, Dioxin, Metals, Radionuclides, SVOCs, etc.

3 - BTEX, TPH, MTBE, PAHs, Metals, SVOA

4 - Creosote, Pentachlorophenol, Organic Solvents, Chlorinated Solvents, Petroleum, Asbestos

Table 13. Aquifer Monitoring Data.

Hydrogeologic Setting: Alluvial Aquifers and Glacial Deposits of Northern Missouri  
 Data Reporting Period: January 2003 to December 2006

| System                   | Range mg/l<br>Nitrite+Nitrate as N | SOCs | VOCs | Compound and Range of Contaminant Levels  |
|--------------------------|------------------------------------|------|------|---|
| Albany                   | 0.10 - 0.21                        | ND   | ND   |   |
| Barnard                  | 0.06 - 1.17                        | ND   | ND   |   |
| Bolckow                  | ND                                 | ND   | ND   |   |
| Bosworth                 | 5.30 - 6.30                        | ND   | ND   |   |
| Braymer                  | 0.07 - 0.10                        | ND   | ND   |   |
| Brunswick - Mo. American | ND - 0.13                          | ND   | ND   |   |
| Burlington Junction      | ND                                 | ND   | ND   |   |
| Caldwell Co. PWSD #1     | ND                                 | ND   | ND   |   |
| Canton                   | 0.07 - 0.14                        | ND   | ND   |   |
| Carrollton               | ND - 0.05                          | ND   |      | Dichloromethane 1.08 ug/l   |
| Chillicothe              | ND                                 | ND   | ND   |   |
| Clark Co. PWSD #1        | 1.79 - 2.37                        | ND   | ND   |   |
| Clay Co. PWSD #3         | ND - 0.08                          | ND   | ND   |   |
| Clay Co. PWSD #8         | ND                                 | ND   | ND   |   |
| Clearmont                | 4.21 - 4.55                        | ND   |      | Xylenes ND - 1.44 ug/l  |
| Conception Junction      | ND - 0.31                          | ND   | ND   |   |
| Craig                    | ND                                 | ND   | ND   |   |
| Elsberry                 | ND                                 | ND   |      | 1,1-Dichloroethylene ND- 1.23 ug/l; 1,2-Dichloroethane ND - 0.58 ug/l;<br>Trichloroethylene ND - 1.20 ug/l; Xylenes ND - 3.94 ug/l; Ethylbenzene ND - 0.78 ug/l |
| Excelsior Springs        | ND - 0.06                          | ND   | ND   |   |
| Fairfax                  | ND - 0.12                          | ND   | ND   |   |
| Gallatin                 | ND - 0.40                          | -    | -    |   |
| Gladstone                | ND                                 | ND   | ND   |   |
| Glasgow                  | ND - 3.45                          |      | ND   | Atrazine ND - 4.01 ug/l; Di(2-Ethylhexyl)-Phthalate 1.61 ug/l   |
| Graham                   | 1.83 - 2.87                        | ND   | ND   |   |
| Harrison Co. PWSD #2     | ND - 0.23                          | ND   | ND   |   |
|                          | Range mg/l                         |      |      |   |

| System                      | Nitrite+Nitrate as N | SOCs | VOCs | Compound and Range of Contaminant Levels              |
|-----------------------------|----------------------|------|------|---|
| Hopkins                     | -                    | ND   | ND   |   |
| Howard Co. PWSD #1          | ND                   | ND   | ND   |   |
| Kahoka                      | ND                   | ND   | ND   |   |
| Keytesville                 | ND - 0.09            | ND   | ND   |   |
| Kingston                    | ND                   | ND   | ND   |   |
| Liberty                     | 0.06 - 0.10          | ND   | ND   |   |
| Linn Co. PWSD #1            | ND                   | ND   | ND   |   |
| Linn-Livingston Co. PWSD #3 | ND - 0.10            | ND   |      | Xylenes ND - 67.60 ug/l; Ethylbenzene ND - 21.20 ug/l |
| Livingston Co. PWSD #2      | ND                   | ND   | ND   |   |
| Livingston Co. PWSD #4      | ND                   | ND   |      | Carbon Tetrachloride 1.14 ug/l                        |
| Maitland                    | 5.55 - 10.40         | ND   | ND   |   |
| Mound City                  | ND                   | ND   | ND   |   |
| North Kansas City           | 0.06 - 0.09          | ND   | ND   |   |
| New Franklin                | ND                   | ND   | ND   |   |
| Norborne                    | ND                   | ND   |      | Xylenes 2.01 ug/l; Ethylbenzene 0.50 ug/l             |
| Ofallon                     | ND - 0.23            | ND   | ND   |   |
| Oregon                      | ND                   | ND   | ND   |   |
| Osborn                      | 4.76 - 4.91          | ND   | ND   |   |
| Palmyra                     | ND                   | ND   |      | Dichloromethane ND - 0.59 ug/l                        |
| Parkville - Mo. American    | ND                   | ND   | ND   |   |
| Pattonsburg                 | ND                   | ND   | ND   |   |
| Polo                        | ND - 0.08            | ND   |      | 1,2,4-Trichlorobenzene 1.22 ug/l                      |
| Portage Des Sioux           | 0.11 – 0.56          | ND   | ND   |   |
| Ravenwood                   | ND                   | ND   | ND   |   |
| Rock Port                   | ND                   | ND   | ND   |   |
| Rosendale                   | ND                   | ND   | ND   |   |
| Salisbury                   | ND                   | ND   | ND   |   |
| Sheridan                    | ND                   | ND   | ND   |   |
| Skidmore                    | ND                   | ND   | ND   |   |
| St. Joseph - Mo. American   | ND                   | ND   | ND   |   |
| Sumner                      | ND                   | ND   |      | Xylenes 2.74 ug/l; Ethylbenzene 0.50 ug/l             |
|                             | <b>Range mg/l</b>    |      |      |   |

| System                       | Nitrite+Nitrate as N | SOCs | VOCs | Compound and Range of Contaminant Levels                     |
|------------------------------|----------------------|------|------|--|
| Tarkio Board of Public Works | ND                   | ND   |      | Xylenes 5.20 ug/l; Ethylbenzene 2.93 ug/l; Toluene 0.91 ug/l |
| Weston                       | ND                   | ND   | ND   |  |

SOC = synthetic organic compound

VOC = volatile organic compound

ND = not detected

Table 14. Summary Of Groundwater Protection Programs.

| Program or Activities  | Check (X ) | Implementation Status | Responsible State Agency |
|--|------------|-----------------------|--------------------------|
| Active SARA Title III Program  | X          | Fully Established     | MDPS/SEMA                |
| Ambient Groundwater Monitoring System  |            | NA                    |                          |
| Groundwater Monitoring at Sanitary Landfills                                   | X          | Fully Established     | DNR                      |
| Groundwater-Level Observation Network  | X          | Fully Established     | DNR                      |
| Aquifer Vulnerability Assessment   |            | NA                    |                          |
| Aquifer Mapping and Characterization   | X          | Continuing Effort     | DNR                      |
| Comprehensive Data Management System   |            | NA                    |                          |
| EPA-endorsed Core Comprehensive State Groundwater Protection Program (CSGWPP)  |            | NA                    |                          |
| Groundwater Discharge Permits  | X          | Fully Established     | DNR                      |
| Groundwater Best Management Practices (BMPs)                                   | X          | Continuing Effort     | DNR                      |
| Groundwater Legislation  | X          | Developed             | DNR                      |
| Groundwater Classification   |            | NA                    |                          |
| Groundwater Quality Standards  | X          | Fully Established     | DNR                      |
| Interagency Coordination for Groundwater Protection Initiatives                | X          | Fully Established     | DNR                      |
| Nonpoint source controls   | X          | Continuing Effort     | DNR                      |
| Pesticide State Management Plan  | X          | Developed             | MDA                      |
| Pollution Prevention Program   | X          | Continuing Effort     | DNR                      |
| Resource Conservation and Recovery Act (RCRA) Primacy                          | X          | Fully Established     | DNR                      |
| State Superfund  | X          | Fully established     | DNR                      |
| State RCRA Program Incorporating More Stringent Requirements than RCRA Primacy | X          | Fully Established     | DNR                      |
| State Septic System Regulations  | X          | Fully Established     | MDHSS                    |
| Underground Storage Tank Installation Requirements                             | X          | Fully Established     | DNR                      |
| Underground Storage Tank Remediation Fund                                      |            | NA                    |                          |
| Underground Storage Tank Permit Program  |            | NA                    |                          |
| Underground Injection Control Program  | X          | Fully Established     | DNR                      |
| Vulnerability Assessment for Drinking Water/Wellhead Protection                | X          | Fully Established     | DNR                      |
| Well Abandonment Regulations   | X          | Fully Established     | DNR                      |
| Wellhead Protection Program (EPA-approved)                                     | X          | Fully Established     | DNR                      |
| Well Installation Regulations  | X          | Fully Established     | DNR                      |

MDPS/SEMA = Missouri Department of Public Safety, State Emergency Management Agency

MDA = Missouri Department of Agriculture

MDHSS = Missouri Department of Health & Senior Services

Notes:

Active SARA Title III Program: This program is administered by the Missouri Department of Public Safety, State Emergency Management Agency.

Ambient Groundwater Monitoring System: There is no system per se. The state has participated in several opportunities to monitor ambient groundwater, such as impact analyses following the floods of 1993.

Groundwater Monitoring at Sanitary Landfills: The department's Solid Waste Management Program oversees monitoring at sanitary landfills.

Groundwater-Level Well Observation Network: Established in 1951, this network is operated by the department's Water Resources Center and currently consists of 75 wells.

Aquifer Vulnerability Assessment: The department does not have a specific program in place, but the department's Water Resources Center collects groundwater supply data and performs resource assessments.

Aquifer Mapping and Characterization: The Water Resources Center participates in aquifer mapping. No present systematic activity is done, although these activities may be conducted in concert with hazardous substance release investigations. The department's Public Drinking Water Branch is currently working with the Water Resources Center to perform aquifer monitoring and characterization to delineate which aquifer zones are responsible for the highest concentration of radionuclides. In addition, the U.S. Geological Survey has done considerable work on aquifer characteristics.

Comprehensive Data Management System: None.

EPA-endorsed Core Comprehensive State Groundwater Protection Program: No formal program has been established.

Groundwater Discharge Permits: Underground Injection Control permits are issued jointly by the department's Division of Geology and Land Survey and Water Protection Program.

Groundwater Best Management Practices: Some BMPs are established as part of the Nonpoint Source Management Plan. The Soil and Water Conservation Program also provides cost-share to help agricultural landowners install BMPs on their land.

Groundwater Legislation: The Cave Resources Act and Clean Water Law deal directly with groundwater. Other laws, such as the Dead Animal Disposal Statute, prescribe protections for groundwater. There is no comprehensive groundwater protection statute per se.

Groundwater Classification: There is no classification system at this time, although it has been proposed in the past.

Groundwater Quality Standards: Standards have been established as part of state water quality standards.

Interagency Coordination for Groundwater Protection Initiatives: Opportunities for monthly coordination are provided through the Water Quality Coordinating Committee.

Nonpoint Source Controls: The nonpoint source management program provides guidance for voluntary controls. In addition, the department's Soil and Water Conservation Program provides cost-share for soil and water conservation.

Pesticide State Management Program: A general pesticide and water quality management plan was prepared by the Missouri Department of Agriculture in conjunction with the Missouri Department of Natural Resources. The plan addresses both groundwater and surface water, and has been concurred with by EPA.



**Pollution Prevention Program:** The department uses outreach and assistance to educate Missourians on pollution prevention.

**Resource Conservation and Recovery Act (RCRA) Primacy:** RCRA is administered by the department's Hazardous Waste Program.

**State Superfund:** This program is administered by the department's Hazardous Waste Program, and provides for a state registry of confirmed abandoned hazardous waste disposal sites.

**State RCRA Program Incorporating More Stringent Requirements than RCRA Primacy:** Requirements are administered by the department's Hazardous Waste Program.

**State Septic System Regulations:** Regulations are administered by the Department of Health & Senior Services.

**Underground Storage Tank Installation Requirements:** Requirements are administered by the department's Hazardous Waste Program.

**Underground Storage Tank Remediation Fund:** The department does not have an underground storage tank remediation fund, but does have a similar fund called the Petroleum Storage Tank Insurance Fund. It was initially established to provide underground storage tank owners and operators with assistance in meeting state and federal financial responsibility requirements. It has since been amended, broadening eligibility and expanding benefits.

**Underground Storage Tank Permit Program:** Tanks are required to be registered but not permitted.

**Underground Injection Control Program:** The program is administered by the department's Division of Geology and Land Survey.

**Vulnerability Assessment for Drinking Water/Wellhead Protection:** Assessments are administered by the department's Water Protection Program. A vulnerability assessment of Missouri drinking water to chemical contamination was conducted and implemented in 1991.

**Well Abandonment Regulations:** Regulations are administered by the department's Division of Geology and Land Survey.

**Wellhead Protection Program (EPA-approved):** This program is administered by the department's Water Protection Program.

**Well Installation Regulations:** Regulations are administered by the department's Water Protection Program.

For more information, call the Department of Natural Resources at (573) 751-1300.



**Appendix I**  
**Impaired or Potentially Impaired Waters of Missouri**

Table 15. 2006 Missouri Section 303(d) List,  
As Approved by the Missouri Clean Water Commission

| Waterbody Name   | WBID | First Year on 303(d) | Length/Area of Impaired Segment | Pollutant                               | Source                   | Impaired Uses* | Other Designated Uses* | Upstream End of Impaired Segment |           | Downstream End of Impaired Segment |           | Primary County |
|------------------|------|----------------------|---------------------------------|---|--------------------------|----------------|------------------------|----------------------------------|-----------|------------------------------------|-----------|----------------|
|                  |      |                      |                                 |   |                          |                |                        | Latitude                         | Longitude | Latitude                           | Longitude |                |
| Bee Fork         | 2760 | 2006                 | 1.0 mi.                         | Lead                                    | Fletcher Mine            | AQL            | FC, LWW, WBC           | 37.4410                          | -91.0960  | 37.4431                            | -91.0792  | Reynolds       |
| Big Bottom Creek | 1746 | 1998                 | 1.8 mi.                         | Low D.O.                                | Lake Forest Subdivision  | AQL            | FC, LWW                | 37.9540                          | -90.2066  | 37.9745                            | -90.1997  | Ste. Genevieve |
| Big Creek        | 444  | 2006                 | 6.0 mi.                         | Ammonia, Low D.O.                       | Bethany WWTP             | AQL            | FC, LWW, WBC, DWS      | 40.2542                          | -94.0636  | 40.2038                            | -94.0756  | Harrison       |
| Big River        | 2080 | 1994                 | 19.0 mi.                        | Cadmium, Lead, Zinc, Inorganic Sediment | Old Lead Belt AML        | AQL            | FC, LWW, WBC, IND      | 37.8721                          | -90.5885  | 37.9329                            | -90.5123  | St. Francois   |
|                  |      | 1994                 | 16.0 mi.                        | Cadmium, Lead, Inorganic Sediment       |                          |                |                        | 37.9329                          | -90.5123  | 38.0078                            | -90.6282  |                |
|                  |      | 1994                 | 3.0 mi.                         | Lead, Inorganic Sediment                |                          |                |                        | 38.0078                          | -90.6282  | 38.0364                            | -90.6196  |                |
|                  |      | 1994                 | 17.0 mi.                        |   |                          | AQL, FC        | LWW, WBC, IND          | 38.0364                          | -90.6196  | 38.1569                            | -90.7022  | Jefferson      |
| Blue River       | 417  | 2006                 | 4.0 mi.                         | Bacteria                                | Urban Runoff             | WBC            | FC, AQL, LWW, IND      | 39.0694                          | -94.5071  | 39.1228                            | -94.4658  | Jackson        |
| Blue River       | 418  | 2006                 | 9.0 mi.                         | Bacteria                                | Urban Runoff             | WBC            | FC, AQL, LWW, SCR, IND | 39.0156                          | -94.5208  | 39.0694                            | -94.5071  | Jackson        |
| Blue River       | 419  | 2006                 | 9.0 mi.                         | Bacteria                                | Urban Runoff             | WBC            | FC, AQL, LWW, SCR      | 38.9526                          | -94.5633  | 39.0156                            | -94.5208  | Jackson        |
| Bobs Creek       | 35   | 2006                 | 1.0 mi.                         | Low D.O.                                | Lincoln Co. PWSD #1 WWTP | AQL            | FC, LWW, WBC           | 38.9860                          | -90.8701  | 38.9799                            | -90.8541  | Lincoln        |

| Waterbody Name     | WBID  | First Year on 303(d) | Length/Area of Impaired Segment | Pollutant          | Source                 | Impaired Uses* | Other Designated Uses*      | Upstream End of Impaired Segment |           | Downstream End of Impaired Segment |           | Primary County |
|--------------------|-------|----------------------|---------------------------------|--------------------|------------------------|----------------|-----------------------------|----------------------------------|-----------|------------------------------------|-----------|----------------|
|                    |       |                      |                                 |                    |                        |                |                             | Latitude                         | Longitude | Latitude                           | Longitude |                |
| Brush Creek        | 1371  | 2002                 | 4.0 mi.                         | Low D.O.           | Humansville WWTP       | AQL            | FC, LWW, WBC                | 37.7913                          | -93.5901  | 37.8316                            | -93.6277  | Polk           |
| Buffalo Ditch      | 3118  | 1994                 | 3.0 mi.                         | Ammonia, Low D.O.  | Kennett WWTP           | AQL            | FC, LWW, WBC                | 36.2001                          | -90.0614  | 36.1609                            | -90.0826  | Dunklin        |
| Capps Cr.          | 3234  | 2006                 | 4.0 mi.                         | Bacteria           | Rural NPS              | WBC            | AL, LWW, IR, SCR            | 36.88319                         | -94.02616 | 36.88843                           | -94.09365 | Newton         |
| Cave Spring Br.    | 3245U | 1998                 | 0.2 mi.                         | Nutrients          | Simmons Ind.           | GC**           |                             | 36.5468                          | -94.6094  | 36.5475                            | -94.6178  | McDonald       |
| Center Creek       | 3203  | 1994                 | 12.8 mi.                        | Cadmium, Lead      | Tri-State AML          | AQL            | FC, LWW, WBC, SCR, IRR, IND | 37.1754                          | -94.4550  | 37.1510                            | -94.6170  | Jasper         |
| Chariton River     | 640   | 2006                 | 20.0 mi.                        | Bacteria           | Rural NPS              | WBC            | FC, AQL, LWW, SCR, IRR      | 39.6819                          | -92.6928  | 39.4428                            | -92.8784  | Chariton       |
| Clear Creek        | 3239  | 2006                 | 3.0 mi.                         | Low D.O.           | Monett WWTP            | AQL            | FC, LWW, WBC                | 36.9174                          | -93.9470  | 36.9423                            | -94.0002  | Lawrence       |
| Courtois Creek     | 1943  | 2006                 | 3.0 mi.                         | Lead, Zinc         | Viburnum Mine Tailings | AQL            | FC, LWW, WBC, SCR           | 37.7648                          | -91.0718  | 37.7989                            | -91.0589  | Washington     |
| Crooked Creek      | 1928  | 2006                 | 3.5 mi.                         | Cadmium, Lead      | Casteel Mine           | AQL            | FC, LWW, WBC                | 37.6929                          | -91.1593  | 37.7133                            | -91.2048  | Crawford       |
| Dardenne Creek     | 221   | 2006                 | 1.0 mi.                         | Inorganic Sediment | Suburban and Rural NPS | AQL            | FC, LWW, WBC, SCR           | 38.7361                          | -90.7854  | 38.7366                            | -90.7699  | St. Charles    |
| Dardenne Creek     | 222   | 2006                 | 3.4 mi.                         | Inorganic Sediment | Suburban and Rural NPS | AQL            | FC, LWW, WBC, SCR           | 38.7388                          | -90.8301  | 38.7361                            | -90.7854  | St. Charles    |
| Douger Branch      | 3168  | 2006                 | 2.5 mi.                         | Cadmium, Lead      | Aurora AML             | AQL            | FC, LWW, WBC                | 36.9751                          | -93.7139  | 36.9775                            | -93.7798  | Lawrence       |
| Dousinbury Creek   | 1180  | 2006                 | 3.5 mi.                         | Bacteria           | Rural NPS              | WBC            | AQL, FC, LWW                | 37.5731                          | -92.9276  | 37.5952                            | -92.9801  | Dallas         |
| Dry Auglaize Creek | 1145  | 2002                 | 3.0 mi.                         | Unknown            | Unknown                | AQL            | FC, LWW, WBC                | 37.7049                          | -92.6505  | 37.7408                            | -92.6220  | Laclede        |
| Dutro Carter Creek | 3569  | 2006                 | 0.6 mi.                         | Low D.O.           | Rolla Southeast WWTP   | AQL            | FC, LWW, WBC                | 37.9320                          | -91.7262  | 37.9317                            | -91.7169  | Phelps         |
|                    |       |                      | 0.1 mi.                         | Ammonia            |                        |                |                             | 37.9320                          | -91.7262  | 37.9318                            | -91.7245  |                |

| Waterbody Name           | WBID | First Year on 303(d) | Length/Area of Impaired Segment | Pollutant                               | Source                   | Impaired Uses* | Other Designated Uses*      | Upstream End of Impaired Segment |           | Downstream End of Impaired Segment |           | Primary County |
|--------------------------|------|----------------------|---------------------------------|---|--------------------------|----------------|-----------------------------|----------------------------------|-----------|------------------------------------|-----------|----------------|
|                          |      |                      |                                 |   |                          |                |                             | Latitude                         | Longitude | Latitude                           | Longitude |                |
| East Fork Chariton River | 682  | 2006                 | 48.5 mi.                        | Sulfate                                 | Multiple AMLs            | AQL            | FC, LWW, WBC, DWS, IRR      | 39.7509                          | -92.5158  | 39.3403                            | -92.8445  | Randolph       |
| East Fork Grand River    | 457  | 2006                 | 25.0 mi.                        | Bacteria                                | Rural NPS                | WBC            | FC, AQL, LWW, DWS, IRR      | 40.4943                          | -94.3123  | 40.1977                            | -94.3620  | Gentry         |
| E. Fk. Locust Creek      | 608  | 2006                 | 2.5 mi.                         | Low D.O.                                | Milan WWTP               | AQL            | FC, LWW                     | 40.1936                          | -93.1139  | 40.1664                            | -93.1190  | Sullivan       |
| E. Fk. Tebo Creek        | 1282 | 2006                 | 1.0 mi.                         | Low D.O.                                | Windsor Southwest Lagoon | AQL            | FC, LWW, WBC                | 38.5142                          | -93.5346  | 38.5005                            | -93.5297  | Henry          |
| Eaton Branch             | 2166 | 2006                 | 0.9 mi.                         | Cadmium, Lead, Zinc                     | Leadwood Tailings Pile   | AQL            | FC, LWW, WBC                | 37.8675                          | -90.6057  | 37.8721                            | -90.5885  | St. Francois   |
| Fellows Lake             | 7237 | 2006                 | 820 ac.                         | Nutrients                               | Suburban and Rural NPS   | GC**           | AQL, LWW, WBC, SCR, DWS     | 37.3097                          | -93.1790  | 37.3155                            | -93.2294  | Greene         |
| Flat Creek               | 865  | 2006                 | 15.5 mi.                        | Unknown                                 | Unknown                  | AQL            | FC, LWW, WBC, SCR           | 38.5436                          | -93.4116  | 38.6588                            | -93.2537  | Pettis         |
| Flat River Creek         | 2168 | 1994                 | 1.0 mi.                         | Cadmium, Lead, Zinc, Inorganic Sediment | Old Lead Belt AML        | AQL            | FC, LWW, WBC                | 37.8372                          | -90.5301  | 37.8481                            | -90.5175  | St. Francois   |
|                          |      |                      | 4.0 mi.                         |   |                          | AQL, FC        | LWW, WBC                    | 37.8481                          | -90.5175  | 37.8918                            | -90.4999  |                |
| Gabriel Creek            | 883  | 2006                 | 0.8 mi.                         | Ammonia, Low D.O.                       | Stover WWTPs             | AQL            | FC, LWW                     | 38.4377                          | -93.0000  | 38.4477                            | -93.0041  | Morgan         |
|                          |      | 1994                 | 1.2 mi.                         | Low D.O.                                |                          |                |                             | 38.4477                          | -93.0041  | 38.4641                            | -93.0033  |                |
| Grand River              | 593  | 2006                 | 60.0 mi.                        | Bacteria                                | Rural NPS                | WBC            | AQL, FC, LWW, SCR, DWS, IRR | 39.7410                          | -93.5352  | 39.3844                            | -93.1071  | Chariton       |
| Gravois Creek            | 1712 | 2006                 | 2.0 mi.                         | Bacteria                                | Urban Runoff             | WBC            | AQL, FC, LWW                | 38.5407                          | -90.2985  | 38.5595                            | -90.2829  | St. Louis      |
| Gravois Creek            | 1713 | 2006                 | 4.0 mi.                         | Bacteria                                | Urban Runoff             | AQL, WBC       | FC, LWW                     | 38.5467                          | -90.3480  | 38.5407                            | -90.2985  | St. Louis      |
| Grindstone Creek         | 1009 | 2006                 | 1.5 mi.                         | Bacteria                                | Unknown                  | WBC            | AQL, FC, LWW                | 38.9224                          | -92.3034  | 38.9278                            | -92.3218  | Boone          |
| Hickory Cr.              | 3226 | 2006                 | 1.0 mi.                         | Bacteria                                | Unknown                  | WBC            | LWW, AQL                    | 36.88135                         | -94.36867 | 36.89394                           | -94.3708  | Newton         |

| Waterbody Name                   | WBID | First Year on 303(d) | Length/Area of Impaired Segment | Pollutant                | Source                                 | Impaired Uses* | Other Designated Uses* | Upstream End of Impaired Segment |           | Downstream End of Impaired Segment |           | Primary County |
|----------------------------------|------|----------------------|---------------------------------|--------------------------|--|----------------|------------------------|----------------------------------|-----------|------------------------------------|-----------|----------------|
|                                  |      |                      |                                 |                          |  |                |                        | Latitude                         | Longitude | Latitude                           | Longitude |                |
| Hinkson Creek                    | 1007 | 1998                 | 6.0 mi.                         | Unknown                  | Urban Runoff                           | AQL            | FC, LWW, WBC, SCR      | 38.9278                          | -92.3375  | 38.9217                            | -92.4135  | Boone          |
| Hinkson Creek                    | 1008 | 1998                 | 6.3 mi.                         | Unknown                  | Urban Runoff                           | AQL            | FC, LWW, WBC           | 38.9629                          | -92.2961  | 38.9278                            | -92.3375  | Boone          |
| Indian Creek                     | 420  | 2002                 | 3.0 mi.                         | Bacteria                 | WWTP in Kansas, Urban Runoff           | WBC            | AQL, FC, LWW, IND      | 38.9384                          | -94.6085  | 38.9526                            | -94.5633  | Jackson        |
| Indian Creek                     | 1946 | 2002                 | 1.5 mi.                         | Lead, Zinc               | Viburnum Mine Tailings                 | AQL            | FC, LWW, WBC           | 37.7413                          | -91.0847  | 37.7648                            | -91.0718  | Washington     |
| Indian Creek, Tributary to       | 3663 | 2006                 | 0.5 mi.                         | Lead, Zinc               | Viburnum Mine Tailings                 | AQL            | FC, LWW, WBC           | 37.7559                          | -91.0946  | 37.7596                            | -91.0748  | Washington     |
| Indian Creek                     | 3256 | 2006                 | 5.0 mi.                         | Bacteria                 | Rural NPS                              | WBC            | AL, LWW, IR, SCR       | 36.7944                          | -94.2326  | 36.76246                           | -94.2729  | McDonald       |
| Lake Taneycomo                   | 7314 | 1994                 | 865.0 ac.                       | Low D.O.                 | Table Rock Dam                         | AQL            | FC, LWW, WBC, SCR, DWS | 36.5957                          | -93.3091  | 36.6592                            | -93.1244  | Taney          |
| Lamine River                     | 847  | 2006                 | 54.0 mi.                        | Bacteria                 | Rural NPS                              | WBC            | AQL, FC, LWW, SCR, IRR | 38.6683                          | -92.953   | 38.9802                            | -92.8508  | Cooper         |
| Lewistown Lake                   | 7020 | 2002                 | 29.0 ac.                        | Atrazine                 | Crop Production                        | DWS            | AQL, FC, LWW, WBC, SCR | 40.0978                          | -91.8269  | 40.0978                            | -91.8190  | Lewis          |
| Little Dry Fork                  | 1863 | 2006                 | 1.0 mi.                         | Low D.O.                 | Rolla Southeast WWTP                   | AQL            | FC, LWW, WBC           | 37.9318                          | -91.7170  | 37.9393                            | -91.7060  | Phelps         |
| Little Muddy Creek, Tributary to | 3490 | 1998                 | 0.4 mi.                         | Color, Chloride          | Tyson Foods                            | AQL, GC**      | FC, LWW, WBC           | 38.7680                          | -93.3021  | 38.7731                            | -93.2912  | Pettis         |
| Long Branch Creek                | 696  | 2006                 | 2.0 mi.                         | Low D.O.                 | Atlanta WWTP                           | AQL            | FC, LWW, WBC           | 39.8979                          | -92.4934  | 39.8744                            | -92.4908  | Macon          |
| Lost Creek                       | 3278 | 2006                 | 8.5                             | Bacteria                 | Rural NPS                              | WBC            | AL, LWW, SCR           | 36.88931                         | -94.49823 | 36.84035                           | -94.61853 | Newton         |
| Main Ditch                       | 2814 | 2006                 | 1.0 mi.                         | Temperature              | Stream Modification                    | AQL            | LWW, FC, WBC, IRR      | 36.7348                          | -90.4131  | 36.7295                            | -90.3984  | Butler         |
|                                  |      |                      | 6.0 mi.                         | pH, Ammonia, Temperature | Poplar Bluff WWTP, Stream Modification |                |                        | 36.7295                          | -90.3984  | 36.6163                            | -90.4031  |                |
|                                  |      |                      | 7.0 mi.                         | Temperature              | Stream Modification                    |                |                        | 36.6163                          | -90.4031  | 36.5558                            | -90.4485  |                |

| Waterbody Name            | WBID  | First Year on 303(d) | Length/Area of Impaired Segment | Pollutant         | Source                | Impaired Uses* | Other Designated Uses* | Upstream End of Impaired Segment |           | Downstream End of Impaired Segment |           | Primary County |
|---------------------------|-------|----------------------|---------------------------------|-------------------|-----------------------|----------------|------------------------|----------------------------------|-----------|------------------------------------|-----------|----------------|
|                           |       |                      |                                 |                   |                       |                |                        | Latitude                         | Longitude | Latitude                           | Longitude |                |
| McKenzie Creek            | 2786  | 2002                 | 2.5 mi.                         | Low D.O.          | Piedmont WWTP         | AQL            | FC, LWW, WBC           | 37.1389                          | -90.7070  | 37.1058                            | -90.7180  | Wayne          |
| Middle Fork Grand River   | 468   | 2006                 | 25.0 mi.                        | Bacteria          | Rural NPS             | WBC            | AQL, FC, LWW, SCR, IRR | 40.5418                          | -94.3513  | 40.2186                            | -94.3944  | Gentry         |
| Mound Br.                 | 1300  | 1998                 | 1.0 mi.                         | Low D.O.          | Butler WWTP           | AQL            | LWW, WBC               | 38.2262                          | -94.3444  | 38.217                             | -94.351   | Bates          |
| Muddy Creek               | 853   | 2006                 | 1.0 mi.                         | Color             | Tyson Foods           | GC**           | AQL, FC, LWW, WBC      | 38.7718                          | -93.2748  | 38.7675                            | -93.2582  | Pettis         |
| North Fork Spring River   | 3188  | 2006                 | 29.9                            | Unknown           | Unknown               | AQL            | FC, LWW, WBC           | 37.3172                          | -94.0258  | 37.4825                            | -94.2927  | Barton         |
|                           |       |                      | 1.0 mi.                         | Low D.O., Ammonia | Lamar WWTP            |                |                        | 37.4825                          | -94.2927  | 37.4790                            | -94.2786  |                |
|                           |       |                      | 3.1 mi.                         | Low D.O.          | Lamar WWTP            |                |                        | 37.4790                          | -94.2786  | 37.4566                            | -94.2819  |                |
|                           |       |                      | 11.5 mi.                        | Unknown           | Unknown               |                |                        | 37.4566                          | -94.2819  | 37.3406                            | -94.3312  |                |
| Niangua River             | 1170  | 2006                 | 2.0 mi.                         | Bacteria          | Unknown               | WBC            | AQL, FC, LWW, SCR      | 37.6865                          | -92.9374  | 37.6929                            | -92.9236  | Dallas         |
| No Creek                  | 550   | 2006                 | 22.5 mi.                        | Bacteria          | Rural NPS             | WBC            | AQL, FC, LWW           | 40.1706                          | -93.4500  | 39.8891                            | -93.5716  | Grundy         |
| Pearson Creek             | 2373  | 2006                 | 1.5 mi.                         | Bacteria          | Unknown               | WBC            | AQL, FC, LWW           | 37.1821                          | -93.1991  | 37.1637                            | -93.1965  | Greene         |
| Pickle Creek              | 1755  | 2006                 | 7.0 mi.                         | pH                | Natural               | AQL            | FC, LWW, WBC           | 37.8146                          | -90.2552  | 37.8369                            | -90.2036  | Ste. Genevieve |
| Piper Creek (Town Branch) | 1444  | 2006                 | 0.5 mi.                         | Unknown           | Unknown               | AQL            | FC, LWW, WBC           | 37.6113                          | -93.3953  | 37.6169                            | -93.3900  | Polk           |
|                           |       | 1998                 | 2.0 mi.                         | Organic Sediment  | Bolivar WWTP, unknown |                |                        | 37.6169                          | -93.3900  | 37.6387                            | -93.3829  |                |
| Saline Creek, Trib. to    | 2859U | 2006                 | 1.0 mi.                         | Nickel            | Madison Mine          | GC**           |                        | 37.5516                          | -90.2729  | 37.5594                            | -90.2756  | Madison        |
| Shaw Branch               | 2170  | 1994                 | 2.0 mi.                         | Cadmium, Lead     | Federal AML           | AQL            | FC, LWW, WBC           | 37.8332                          | -90.5173  | 37.8481                            | -90.5175  | St. Francois   |
| South Blackbird Creek     | 655   | 2006                 | 4.0 mi.                         | Ammonia           | Unknown               | AQL            | FC, LWW, WBC           | 40.4246                          | -92.9602  | 40.4139                            | -92.9050  | Putnam         |

| Spring River              | 3160  | 2006                 | 3.0 mi.                         | Bacteria                            | Urb/Rural Pt/NPS  | WBC            | AL, LWW, IR, SCR       | 37.1864                          | -94.31279 | 37.19051                           | -94.35594 | Jasper         |
|---------------------------|-------|----------------------|---------------------------------|-------------------------------------|-------------------|----------------|------------------------|----------------------------------|-----------|------------------------------------|-----------|----------------|
| Waterbody Name            | WBID  | First Year on 303(d) | Length/Area of Impaired Segment | Pollutant                           | Source            | Impaired Uses* | Other Designated Uses* | Upstream End of Impaired Segment |           | Downstream End of Impaired Segment |           | Primary County |
|                           |       |                      |                                 |                                     |                   |                |                        | Latitude                         | Longitude | Latitude                           | Longitude |                |
| Strother Creek            | 2751U | 2006                 | 1.0 mi.                         | Zinc                                | Buick Mine        | GC**           |                        | 37.5881                          | -91.0602  | 37.5948                            | -91.0471  | Reynolds       |
| Table Rock Lake           | 7313  | 2002                 | 43100 ac.                       | Nutrients                           | Pt/NP Sources     | GC**           | LWW, AQL, WBC, SCR     | 36.4984                          | -93.754   | 36.5961                            | -93.3138  | Stone          |
| Turkey Creek              | 3216  | 2002                 | 7.0 mi.                         | Cadmium                             | Multiple AMLs     | AQL            | FC, LWW, WBC           | 37.1058                          | -94.5025  | 37.1248                            | -94.6180  | Jasper         |
| Turkey Creek              | 3282  | 2006                 | 0.8 mi.                         | Cadmium, Zinc, Lead                 | Mine Tailings     | AQL            | FC, LWW, WBC           | 37.9233                          | -90.5486  | 37.9331                            | -90.5523  | St. Francois   |
|                           |       |                      | 1.2 mi.                         | Lead                                |                   |                |                        | 37.9331                          | -90.5523  | 37.9490                            | -90.5592  |                |
| Village Creek             | 2863  | 2006                 | 1.5 mi.                         | Inorganic Sediment, Manganese, Lead | Mine La Motte AML | AQL            | FC, LWW, WBC           | 37.5988                          | -90.2541  | 37.5656                            | -90.3092  | Madison        |
| Warm Fork Spring River    | 2579  | 2006                 | 9.0 mi.                         | Bacteria                            | Unknown           | WBC            | AQL, FC, LWW, SCR, IRR | 36.6003                          | -91.5482  | 36.4991                            | -91.5273  | Oregon         |
| Watkins Creek             | 1708  | 2006                 | 3.5 mi.                         | Bacteria                            | Urban Runoff      | AQL, WBC       | FC, LWW                | 38.7696                          | -90.2213  | 38.7734                            | -90.1754  | St. Louis      |
| West Fork Medicine Creek  | 623   | 2006                 | 40.0 mi.                        | Unknown                             | Unknown           | AQL            | FC, LWW, WBC           | 40.5794                          | -93.4292  | 40.1058                            | -93.3760  | Mercer         |
| Willow Fork, Tributary to | 956   | 2006                 | 0.5 mi.                         | Low D.O.                            | Tipton WWTP       | AQL            | FC, LWW                | 38.6321                          | -92.7698  | 38.6274                            | -92.7644  | Moniteau       |

\*Designated Use Codes: AQL-Protection of Aquatic Life (Warm, Cool, or Cold Water); FC-Fish Consumption; WBC-Whole Body Contact Recreation; SCR-Secondary Contact Recreation; DWS-Drinking Water Supply; IRR-Irrigation; LWW-Livestock & Wildlife Watering; IND-Industrial

\*\*General Criteria: Although no specific designated uses have been impaired, the general water quality criteria which apply to all waters of the state [10 CSR 20-7.031 (3)] have been violated, so the water is considered impaired and eligible for the 303(d) list. In the case of unclassified waters, this includes acute toxicity.



Table 16. Other Impaired Waters of Missouri.

The following list includes all other classified waters in Missouri found to be impaired by applying the Methodology for the Development of the 2006 Section 303(d) List in Missouri. Included in this list are waters with approved TMDLs, waters where sufficient pollution control measures are in place, waters which are not impaired by discrete pollutants, and other waters which were not approved for 303(d) listing by the Clean Water Commission.

| Name                             | WBID | Length/Area<br>(miles/acres) | County    | Pollutant                        | Source          |
|----------------------------------|------|------------------------------|-----------|----------------------------------|-----------------|
| Big Otter Creek                  | 1224 | 1.0                          | Henry     | pH                               | Otter Creek AML |
| Big Otter Creek,<br>Tributary to | 1225 | 1.0                          | Henry     | pH                               | Otter Creek AML |
|                                  |      | 1.0                          |           | Low Dissolved<br>Oxygen          | Unknown         |
| Brushy Creek                     | 1592 | 3.0                          | Texas     | Low Dissolved<br>Oxygen          | Houston WWTP    |
| Buffalo Ditch                    | 3118 | 15.0                         | Dunklin   | Low Dissolved<br>Oxygen          | Unknown         |
| Burgher Branch                   | 1865 | 0.6                          | Phelps    | Ammonia, Low<br>Dissolved Oxygen | Rolla SE WWTP   |
|                                  |      | 1.4                          |           | Low Dissolved<br>Oxygen          | Unknown         |
| Cedar Creek                      | 0737 | 4.0                          | Boone     | Low Dissolved<br>Oxygen          | Unknown         |
| Cedar Creek,<br>Tributary to     | 0743 | 1.5                          | Callaway  | Low Dissolved<br>Oxygen          | Unknown         |
| Center Creek                     | 3203 | 12.8                         | Jasper    | Zinc                             | Tri-State AML   |
| Clear Creek                      | 1333 | 28.0                         | St. Clair | Low Dissolved<br>Oxygen          | Unknown         |
| Clear Creek                      | 1336 | 18.0                         | Vernon    | Low Dissolved<br>Oxygen          | Unknown         |
| Coldwater Creek                  | 1706 | 5.5                          | St. Louis | Chloride                         | Urban Runoff    |
|                                  |      | 5.5                          |           | Low Dissolved<br>Oxygen          | Unknown         |
| Creve Coeur<br>Creek             | 1703 | 2.0                          | St. Louis | Chloride                         | Urban Runoff    |
|                                  |      | 2.0                          |           | Low Dissolved<br>Oxygen          | Unknown         |
| Dark Creek                       | 0690 | 8.0                          | Randolph  | Sulfate                          | Crutchfield AML |
|                                  |      | 1.0                          |           | Low Dissolved<br>Oxygen          | Unknown         |
| Davis Creek                      | 0912 | 3.3                          | Lafayette | Ammonia, Low<br>Dissolved Oxygen | Odessa SE WWTP  |
|                                  |      | 2.4                          |           | Low Dissolved<br>Oxygen          | Unknown         |
| Ditch #36                        | 3109 | 7.0                          | Dunklin   | Low Dissolved<br>Oxygen          | Unknown         |
| Ditch to Buffalo<br>Ditch        | 3120 | 12.0                         | Dunklin   | Low Dissolved<br>Oxygen          | Unknown         |

| Name                     | WBID | Length/Area<br>(miles/acres) | County     | Pollutant                     | Source                  |
|--------------------------|------|------------------------------|------------|-------------------------------|-------------------------|
| Dry Auglaize Creek       | 1145 | 1.0                          | Laclede    | Low Dissolved Oxygen          | Unknown                 |
| East Brush Creek         | 0811 | 2.5                          | Moniteau   | Ammonia, Low Dissolved Oxygen | California N WWTP       |
| Elkhorn Creek            | 0189 | 2.0                          | Montgomery | Low Dissolved Oxygen          | Montgomery City NE WWTP |
| Fassnight Creek          | 3370 | 4.0                          | Greene     | Low Dissolved Oxygen          | Unknown                 |
| Fishpot Creek            | 2186 | 2.0                          | St. Louis  | Bacteria                      | Urban Runoff            |
|                          |      | 2.0                          |            | Low Dissolved Oxygen          | Unknown                 |
| Fowler Creek             | 0747 | 6.0                          | Boone      | Low Dissolved Oxygen          | Unknown                 |
| Grand Glaize Creek       | 2184 | 4.0                          | St. Louis  | Chloride                      | Urban Runoff            |
| Gravois Creek            | 1713 | 4.0                          | St. Louis  | Chloride                      | Urban Runoff            |
| Horseshoe Creek          | 3413 | 2.9                          | Jackson    | Ammonia, Low Dissolved Oxygen | Oak Grove WWTPs         |
| Howell Creek             | 2582 | 0.3                          | Howell     | Chlorine                      | West Plains WWTP        |
| Jacks Fork               | 2681 | 6.0                          | Shannon    | Bacteria                      | Recreation              |
| Joachim Creek            | 1719 | 2.4                          | Jefferson  | Nickel, Lead                  | Herculaneum Smelter     |
| Joyce Creek              | 3233 | 5.0                          | Barry      | Bacteria                      | Unknown                 |
| Lateral #2 to Main Ditch | 3105 | 11.5                         | Stoddard   | Low Dissolved Oxygen          | Unknown                 |
| Little Beaver Creek      | 1529 | 3.3                          | Phelps     | Low Dissolved Oxygen          | Unknown                 |
| Little Dry Fork          | 1864 | 0.5                          | Phelps     | Low Dissolved Oxygen          | Unknown                 |
| Little Drywood Creek     | 1325 | 17.0                         | Vernon     | Low Dissolved Oxygen          | Unknown                 |
| Little Lindley Creek     | 1438 | 3.0                          | Dallas     | Low Dissolved Oxygen          | Unknown                 |
| Little Niangua River     | 1189 | 15.0                         | Webster    | Low Dissolved Oxygen          | Unknown                 |
| Little Osage River       | 3652 | 8.0                          | Vernon     | Low Dissolved Oxygen          | Unknown                 |
| Little Sac River         | 1381 | 4.0                          | Greene     | Low Dissolved Oxygen          | Springfield NW WWTP     |
|                          |      | 20.0                         | Polk       |                               | Unknown                 |
| Main Ditch               | 2814 | 14.0                         | Butler     | Low Dissolved Oxygen          | Stream Modification     |
| Manacle Creek            | 0742 | 2.0                          | Callaway   | pH, Chloride                  | Cedar Creek AML         |
|                          |      | 2.0                          |            | Sediment                      | Crop Production         |
| McKenzie Creek           | 2786 | 0.1                          | Wayne      | Low Dissolved Oxygen          | Unknown                 |

| Name                              | WBID | Length/Area<br>(miles/acres) | County    | Pollutant                         | Source                        |
|-----------------------------------|------|------------------------------|-----------|-----------------------------------|-------------------------------|
| McKenzie Creek                    | 2787 | 2.0                          | Wayne     | pH                                | Atmospheric Deposition        |
| Miami Creek                       | 1299 | 18.0                         | Bates     | Low Dissolved Oxygen              | Unknown                       |
| Middle Fork Tebo Creek            | 1284 | 5.5                          | Henry     | Sulfate                           | Multiple AMLs                 |
| Middle Fork Tebo Creek, Tributary | 1288 | 3.5                          | Henry     | Sulfate, pH                       | Newcastle Tipple AML          |
| North Fork Cuivre River           | 0170 | 8.0                          | Pike      | Low Dissolved Oxygen              | Unknown                       |
| North River                       | 0081 | 0.2                          | Shelby    | Sediment                          | Central Stone Quarry          |
| Osage River                       | 1031 | 5.0                          | Miller    | Low Dissolved Oxygen              | Flow Modification             |
| Osage River                       | 1293 | 24.0                         | St. Clair | Low Dissolved Oxygen              | Unknown                       |
| Panther Creek                     | 1373 | 8.0                          | St. Clair | Low Dissolved Oxygen              | Unknown                       |
| Piney Creek                       | 2614 | 0.1                          | Oregon    | Chlorine                          | Alton WWTP                    |
| Pogue Creek                       | 3232 | 2.5                          | Barry     | Bacteria                          | Unknown                       |
| Red Oak Creek                     | 2038 | 1.5                          | Gasconade | Low Dissolved Oxygen              | Owensville WWTP               |
|                                   |      | 0.5                          |           | Low Dissolved Oxygen, Temperature | Natural                       |
| Red Oak Creek, Tributary to       | 3360 | 0.5                          | Gasconade | Low Dissolved Oxygen              | Unknown                       |
| Red Oak Creek, Tributary to       | 3361 | 1.5                          | Gasconade | Low Dissolved Oxygen              | Unknown                       |
| River Des Peres                   | 1711 | 1.0                          | St. Louis | Chloride                          | Urban Runoff                  |
| Rock Creek                        | 1714 | 2.0                          | Jefferson | Ammonia, Low Dissolved Oxygen     | Multiple WWTPs                |
| Rocky Branch                      | 3326 | 2.2                          | Clay      | Ammonia, Low Dissolved Oxygen     | Kansas City-Rocky Branch WWTP |
| Sadler Branch                     | 3577 | 0.8                          | Polk      | Low Dissolved Oxygen              | Unknown                       |
| Saline Creek                      | 2859 | 1.0                          | Madison   | Nickel                            | Madison Mine                  |
| Second Nicolson Creek             | 1319 | 8.0                          | Barton    | Chloride                          | Multiple AMLs                 |
| Shoal Creek                       | 3230 | 10.0                         | Barry     | Bacteria                          | Unknown                       |
| Shoal Creek                       | 3231 | 4.0                          | Barry     | Low Dissolved Oxygen, Bacteria    | Unknown                       |
| Sni-a-Bar Creek                   | 0399 | 32.0                         | Jackson   | Low Dissolved Oxygen              | Unknown                       |
| South Fork Salt River             | 0142 | 8.0                          | Audrain   | Low Dissolved Oxygen              | Unknown                       |

| Name                      | WBID | Length/Area<br>(miles/acres) | County       | Pollutant            | Source                        |
|---------------------------|------|------------------------------|--------------|----------------------|-------------------------------|
| Spring Branch             | 1870 | 5.1                          | Dent         | Low Dissolved Oxygen | Unknown                       |
| Stevenson Bayou           | 3135 | 2.0                          | Mississippi  | Low Dissolved Oxygen | Unknown                       |
| St. Francis River         | 2835 | 2.0                          | St. Francois | Low Dissolved Oxygen | Farmington W WWTP             |
|                           |      | 8.0                          |              |                      | Unknown                       |
| Stinson Creek             | 0710 | 2.0                          | Callaway     | Low Dissolved Oxygen | Unknown                       |
| Stockton Branch           | 1361 | 1.0                          | Cedar        | Low Dissolved Oxygen | Stockton WWTP                 |
| Straight Fork             | 0959 | 6.0                          | Morgan       | Chloride             | Versailles WWTP               |
|                           |      | 2.5                          |              | Low Dissolved Oxygen | Unknown                       |
| Sugar Creek               | 0686 | 1.3                          | Randolph     | pH                   | Multiple AMLs                 |
|                           |      | 5.0                          |              | Low Dissolved Oxygen | Unknown                       |
| Trace Creek               | 2850 | 0.5                          | Madison      | pH                   | Atmospheric Deposition        |
| Troublesome Creek         | 0073 | 3.5                          | Marion       | Low Dissolved Oxygen | Unknown                       |
| Turkey Creek              | 3216 | 7.0                          | Jasper       | Zinc                 | Multiple AMLs                 |
| Turkey Creek              | 3282 | 2.0                          | St. Francois | Low Dissolved Oxygen | Unknown                       |
| Walnut Creek              | 1339 | 0.1                          | Cedar        | Low Dissolved Oxygen | Unknown                       |
| Watkins Creek             | 1708 | 3.5                          | St. Louis    | Chloride             | Urban Runoff                  |
| West Fork Drywood Creek   | 1317 | 5.5                          | Vernon       | Low Dissolved Oxygen | Unknown                       |
| West Fork Niangua River   | 1175 | 2.0                          | Webster      | Low Dissolved Oxygen | Unknown                       |
| West Fork Sni-a-Bar Creek | 0400 | 3.0                          | Jackson      | Low Dissolved Oxygen | Lake Lotawana WWTP            |
|                           |      | 3.0                          |              |                      | Unknown                       |
| Whetstone Creek           | 1504 | 3.0                          | Wright       | Low Dissolved Oxygen | Unknown                       |
| Whetstone Creek           | 1505 | 3.5                          | Wright       | Low Dissolved Oxygen | Mountain Grove WWTP           |
| Wilkerson Creek           | 0319 | 1.0                          | Clay         | Low Dissolved Oxygen | Kansas City-Rocky Branch WWTP |
| Willow Fork               | 0955 | 6.5                          | Moniteau     | Low Dissolved Oxygen | Unknown                       |
| Wilson Creek              | 2375 | 1.0                          | Greene       | Low Dissolved Oxygen | Unknown                       |
| Wolf Creek                | 2879 | 3.0                          | St. Francois | Low Dissolved Oxygen | Unknown                       |

| <b>Name</b>                 | <b>WBID</b> | <b>Length/Area<br/>(miles/acres)</b> | <b>County</b> | <b>Pollutant</b>        | <b>Source</b>                   |
|-----------------------------|-------------|--------------------------------------|---------------|-------------------------|---------------------------------|
| Wolf Creek,<br>Tributary to | 3589        | 1.5                                  | St. Francois  | Low Dissolved<br>Oxygen | Unknown                         |
| Knob Noster S.P.<br>Lake    | 7196        | 10.0                                 | Johnson       | Mercury                 | Atmospheric<br>Deposition       |
| Mark Twain Lake             | 7033        | 18,600.0                             | Macon         | Mercury                 | Atmospheric<br>Deposition       |
| Walt Disney Lake            | 7137        | 18.0                                 | Linn          | Chloride                | Hutchison Salt-BNSF<br>Railyard |

Table 17. Potentially Impaired Classified Waters.

The following waters are those for which there is some indication that an impairment to some designated use may exist, but the current data or information indicating the impairment do not meet the data requirements set out by Missouri's Section 303(d) Listing Methodology. The department will make an effort to conduct further monitoring on these waters in order to determine defensibly whether or not these impairments actually exist.

A large number of these potential impairments are ascribed to rural nonpoint sources. However, it should be noted that some of these problems, particularly low dissolved oxygen levels, may be due to natural conditions of the waters that are incompletely understood at this time. The department is currently studying baseline dissolved oxygen levels in small streams in regions of concern, which will help in the future to better distinguish natural stream conditions from anthropogenic impairments.

| <b>Name</b>               | <b>WBID</b> | <b>Primary<br/>County</b> | <b>Potential Pollutant or<br/>Condition</b> | <b>Potential Source</b>          |
|---------------------------|-------------|---------------------------|---|----------------------------------|
| Ackerman Ditch            | 2809        | Butler                    | Habitat Degradation                         | Rural NPS                        |
| Agee Creek                | 0334        | Andrew                    | Habitat Degradation                         | Rural NPS                        |
| Anderson Branch           | 0874        | Pettis                    | Habitat Degradation                         | Rural NPS                        |
| Arapahoe Creek            | 0282        | Andrew                    | Habitat Degradation                         | Rural NPS                        |
| Ash Ditch                 | 3141        | New Madrid                | Habitat Degradation                         | Rural NPS                        |
| Ash Ditch                 | 3142        | Mississippi               | Habitat Degradation                         | Rural NPS                        |
| Ash Slough Ditch          | 3042        | New Madrid                | Habitat Degradation                         | Rural NPS                        |
| Asher Creek               | 1383        | Greene                    | Low Dissolved Oxygen                        | Rural NPS                        |
| Bagby Branch              | 0684        | Randolph                  | Habitat Degradation                         | Rural NPS                        |
| Baker Branch              | 1294        | St. Clair                 | Habitat Degradation                         | Rural NPS                        |
| Barber Creek              | 0622        | Putnam                    | Habitat Degradation                         | Rural NPS                        |
| Barkers Creek             | 1209        | Henry                     | Temperature, pH                             | Rural NPS, Acid Mine<br>Drainage |
| Barkers Creek, Tributary  | 1211        | Henry                     | pH  | Acid Mine Drainage               |
| Basin Fork                | 0867        | Pettis                    | Habitat Degradation                         | Rural NPS                        |
| Basin Fork, Tributary     | 3522        | Pettis                    | Habitat Degradation                         | Rural NPS                        |
| Bay De Charles, Tributary | 0006        | Marion                    | Habitat Degradation                         | Rural NPS                        |

| <b>Name</b>                 | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
|-----------------------------|-------------|-----------------------|---|-------------------------|
| Bean Branch                 | 0148        | Audrain               | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0008        | Marion                | Habitat Degradation                     | Urban, Rural NPS        |
| Bear Creek                  | 0009        | Marion                | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0057        | Scotland              | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0115        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0193        | Montgomery            | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0272        | Platte                | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0416        | Saline                | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0601        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 0933        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 1220        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Bear Creek                  | 1253        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Beaver Dam Creek            | 0145        | Audrain               | Habitat Degradation                     | Rural NPS               |
| Beaver Dam Creek            | 2621        | Ripley                | Habitat Degradation                     | Rural NPS               |
| Beaver Dam Creek            | 3548        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Beaver Dam Creek, Tributary | 3550        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Beaver Dam Creek, Tributary | 3549        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Bee Branch                  | 0667        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Bee Branch                  | 3545        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Bee Branch                  | 3645        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Bee Branch                  | 3501        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Bee Creek                   | 0137        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Bee Creek                   | 0273        | Platte                | Habitat Degradation                     | Rural NPS               |
| Bee Creek, Tributary        | 0274        | Platte                | Habitat Degradation                     | Rural NPS               |
| Bee Tree Lake               | 7309        | St. Louis             | Mercury                                 | Atmospheric Deposition  |
| Beecham Creek               | 3642        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Belcher Branch Lake         | 7365        | Buchanan              | Mercury                                 | Atmospheric Deposition  |
| Bell Fountain Ditch         | 3012        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ben Branch Lake             | 7186        | Osage                 | Mercury                                 | Atmospheric Deposition  |
| Bethany Reservoir           | 7109        | Harrison              | Mercury                                 | Atmospheric Deposition  |
| Big Creek                   | 0207        | Lincoln               | Habitat Degradation                     | Rural NPS               |
| Big Creek                   | 0634        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Big Creek                   | 0638        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Big Creek                   | 1257        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Big Creek                   | 2916        | Iron                  | Lead                                    | Glover Smelter          |
| Big Deer Creek              | 1276        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Big Lead Creek              | 0180        | Lincoln               | Habitat Degradation                     | Rural NPS               |
| Big Muddy Creek             | 0441        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Big Muddy Creek             | 0461        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Big Muddy Creek             | 0462        | Harrison              | Habitat Degradation                     | Rural NPS               |

| <b>Name</b>                 | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>                  |
|-----------------------------|-------------|-----------------------|---|--|
| Big No Creek                | 0553        | Grundy                | Habitat Degradation                     | Rural NPS                                |
| Big River                   | 2074        | Jefferson             | Lead, Cadmium                           | Multiple Abandoned Lead Mines            |
| Big Rock Creek              | 0464        | Worth                 | Habitat Degradation                     | Rural NPS                                |
| Big Rock Creek              | 0465        | Worth                 | Habitat Degradation                     | Rural NPS                                |
| Billy Creek                 | 0659        | Adair                 | Habitat Degradation                     | Rural NPS                                |
| Billy's Branch              | 0124        | Macon                 | Habitat Degradation                     | Rural NPS                                |
| Bitterroot Creek            | 1312        | Vernon                | Habitat Degradation                     | Rural NPS                                |
| Black Creek                 | 0111        | Shelby                | Habitat Degradation                     | Rural NPS                                |
| Black Creek                 | 0112        | Shelby                | Habitat Degradation                     | Rural NPS                                |
| Black Creek                 | 3309        | Cass                  | Habitat Degradation                     | Rural NPS                                |
| Black Jack Creek            | 0917        | Johnson               | Habitat Degradation                     | Rural NPS                                |
| Black River                 | 2769        | Butler                | Mercury                                 | Atmospheric Deposition                   |
| Black River Ditch           | 2807        | Butler                | Habitat Degradation                     | Rural NPS                                |
| Black River, Ditch to       | 2776        | Butler                | Habitat Degradation                     | Rural NPS                                |
| Black River, Ditch to       | 2777        | Butler                | Habitat Degradation                     | Rural NPS                                |
| Black River, Ditch to       | 2770        | Butler                | Habitat Degradation                     | Rural NPS                                |
| Blackberry Creek            | 3184        | Jasper                | Chloride                                | Asbury Power Plant, Abandoned Coal Mines |
| Blackwater River            | 0891        | Saline                | Sediment                                | Limestone Quarry                         |
| Blackwater River, Tributary | 3537        | Saline                | Habitat Degradation                     | Rural NPS                                |
| Blackwater River, Tributary | 3541        | Pettis                | Habitat Degradation                     | Rural NPS                                |
| Blackwater River, Tributary | 3543        | Pettis                | Habitat Degradation                     | Rural NPS                                |
| Blackwater River, Tributary | 3544        | Pettis                | Habitat Degradation                     | Rural NPS                                |
| Blue Ditch                  | 3146        | Scott                 | Habitat Degradation                     | Rural NPS                                |
| Blue Ditch                  | 3147        | Scott                 | Habitat Degradation                     | Rural NPS                                |
| Blue Spring Slough          | 2775        | Butler                | Habitat Degradation                     | Rural NPS                                |
| Blue Springs Creek          | 1852        | Crawford              | Iron                                    | Abandoned Iron Pyrite Mine               |
| Bluestem Lake               | 7370        | Jackson               | Mercury                                 | Atmospheric Deposition                   |
| Bois Brule Ditch            | 1782        | Perry                 | Habitat Degradation                     | Rural NPS                                |
| Bois Brule Ditch, Tributary | 1783        | Perry                 | Habitat Degradation                     | Rural NPS                                |
| Bois Brule Ditch, Tributary | 1784        | Perry                 | Habitat Degradation                     | Rural NPS                                |
| Bois Brule Ditch, Tributary | 1785        | Perry                 | Habitat Degradation                     | Rural NPS                                |
| Bones Branch                | 1301        | Bates                 | Habitat Degradation                     | Rural NPS                                |
| Bonhomme Creek              | 1701        | St. Louis             | Chloride                                | Urban Runoff                             |
| Bourbeuse River             | 2034        | Franklin              | Mercury                                 | Atmospheric Deposition                   |
| Bradley Creek               | 0931        | Johnson               | Habitat Degradation                     | Rural NPS                                |
| Brawley Creek               | 3424        | Johnson               | Habitat Degradation                     | Rural NPS                                |
| Brewer Lake Ditch           | 3153        | Mississippi           | Habitat Degradation                     | Rural NPS                                |
| Bridge Creek                | 0066        | Scotland              | Habitat Degradation                     | Rural NPS                                |

| <b>Name</b>                               | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
|---|-------------|-----------------------|---|-------------------------|
| Bridge Creek                              | 0070        | Knox                  | Habitat Degradation                     | Rural NPS               |
| Bridge Creek                              | 0635        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0069        | Schuyler              | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0106        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0107        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0276        | Platte                | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0408        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0563        | Mercer                | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0574        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 0672        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 1207        | Benton                | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 1238        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 1370        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Brush Creek                               | 1372        | Polk                  | Low Dissolved Oxygen                    | Unknown                 |
| Brush Creek                               | 3298        | Benton                | Habitat Degradation                     | Rural NPS               |
| Brush Creek, Tributary                    | 1208        | Benton                | Habitat Degradation                     | Rural NPS               |
| Brushy Creek                              | 0336        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Brushy Creek                              | 0377        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Brushy Creek                              | 0395        | Clay                  | Habitat Degradation                     | Rural NPS               |
| Brushy Creek                              | 0438        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Brushy Creek                              | 0531        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Brushy Creek                              | 1593        | Texas                 | Low Dissolved Oxygen                    | Unknown                 |
| Brushy Creek                              | 3500        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Bryants Creek                             | 0022        | Lincoln               | Habitat Degradation                     | Rural NPS               |
| Buck Branch                               | 3187        | Jasper                | Habitat Degradation                     | Rural NPS               |
| Buffalo Creek                             | 3539        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Buffalo Ditch                             | 3119        | Dunklin               | Habitat Degradation                     | Urban, Rural NPS        |
| Buncomb Branch                            | 3542        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Burr Oak Creek                            | 0363        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Busch CA Lake #35                         | 7057        | St. Charles           | Mercury                                 | Atmospheric Deposition  |
| Bynum Creek                               | 0709        | Callaway              | Sediment                                | Limestone Quarry        |
| Cache River Ditch                         | 3009        | Butler                | Habitat Degradation                     | Rural NPS               |
| Cameron Lake #4<br>(Grindstone Reservoir) | 7384        | Dekalb                | Mercury                                 | Atmospheric Deposition  |
| Camp Branch                               | 1258        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Camp Branch                               | 1296        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Camp Branch                               | 3324        | Clay                  | Habitat Degradation                     | Rural NPS               |
| Camp Branch, Tributary                    | 3518        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Camp Branch, Tributary                    | 3519        | Pettis                | Habitat Degradation                     | Rural NPS               |



| <b>Name</b>                    | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
|--------------------------------|-------------|-----------------------|---|-------------------------|
| Camp Branch, Tributary         | 3520        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Camp Creek                     | 0866        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Camp Creek                     | 0894        | Saline                | Habitat Degradation                     | Rural NPS               |
| Campbell Creek                 | 0491        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Campbell Creek                 | 0629        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Cane Creek                     | 2833        | Butler                | Habitat Degradation                     | Rural NPS               |
| Cane Creek Ditch               | 2820        | Butler                | Habitat Degradation                     | Rural NPS               |
| Caney Creek                    | 3051        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Castile Creek                  | 0322        | Clinton               | Habitat Degradation                     | Rural NPS               |
| Castile Creek, Tributary       | 0323        | Clinton               | Habitat Degradation                     | Rural NPS               |
| Castor River Diversion Channel | 2273        | Bollinger             | Habitat Degradation                     | Rural NPS               |
| Cato Slough                    | 3081        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Cato Slough                    | 3082        | Bollinger             | Habitat Degradation                     | Rural NPS               |
| Cave Spring Creek              | 1272        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Cedar Creek                    | 0861        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Cedar Creek                    | 1344        | Cedar                 | Low Dissolved Oxygen                    | Unknown                 |
| Chapman Branch                 | 0476        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Chariton River, Old Channel    | 0649        | Putnam                | Habitat Degradation                     | Rural NPS               |
| Chariton River, Old Channel    | 0665        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Chariton River, Old Channel    | 0694        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Chariton River, Old Channel    | 0695        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Chariton River, Tributary      | 0648        | Putnam                | Habitat Degradation                     | Rural NPS               |
| Cheese Creek                   | 3301        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Chesapeake Creek               | 1421        | Lawrence              | Sediment                                | Quarry                  |
| Cinque Hommes Creek            | 1781        | Perry                 | Habitat Degradation                     | Rural NPS               |
| Clammer Branch                 | 1235        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Clark Branch                   | 0676        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 0007        | Marion                | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 0117        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 0292        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 0388        | Clay                  | Altered Aquatic Community               | Rural NPS               |
| Clear Creek                    | 0390        | Clinton               | Altered Aquatic Community               | Rural NPS               |
| Clear Creek                    | 0433        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 0889        | Cooper                | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 1206        | Benton                | Habitat Degradation                     | Rural NPS               |
| Clear Creek                    | 1259        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Clear Creek, Tributary         | 3297        | Benton                | Habitat Degradation                     | Rural NPS               |

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|--------------------------|-------------|-----------------------|---|----------------------------------|
| Clear Creek, Tributary   | 0393        | Clinton               | Habitat Degradation                     | Rural NPS                        |
| Clear Creek, Tributary   | 3633        | Vernon                | Habitat Degradation                     | Rural NPS                        |
| Clear Fork               | 0935        | Johnson               | Low Dissolved Oxygen                    | Wastewater discharges, Rural NPS |
| Clear Fork               | 0936        | Johnson               | Habitat Degradation                     | Rural NPS                        |
| Clear Fork, Tributary    | 3431        | Johnson               | Habitat Degradation                     | Rural NPS                        |
| Clear Fork, Tributary    | 3432        | Johnson               | Habitat Degradation                     | Rural NPS                        |
| Clear Fork, Tributary    | 3433        | Johnson               | Habitat Degradation                     | Rural NPS                        |
| Coal Creek               | 0572        | Harrison              | Habitat Degradation                     | Rural NPS                        |
| Coal Creek               | 1214        | Henry                 | Habitat Degradation                     | Rural NPS, wastewater discharge  |
| Coldwater Creek          | 1271        | Cass                  | Habitat Degradation                     | Rural NPS                        |
| Cole Creek               | 0225        | St. Charles           | Habitat Degradation                     | Rural NPS                        |
| Comstock Creek           | 1322        | Vernon                | Habitat Degradation                     | Rural NPS                        |
| Comstock Creek           | 1323        | Barton                | Habitat Degradation                     | Rural NPS                        |
| Contrary Creek           | 0269        | Buchanan              | Habitat Degradation                     | Rural NPS                        |
| Contrary Creek           | 1458        | Osage                 | Habitat Degradation                     | Rural NPS                        |
| Contrary Creek           | 1459        | Osage                 | Habitat Degradation                     | Rural NPS                        |
| Cooley Lake              | 7090        | Clay                  | Mercury                                 | Atmospheric Deposition           |
| Coon Creek               | 0132        | Randolph              | Low Dissolved Oxygen                    | Rural NPS, wastewater discharge  |
| Coon Creek               | 0187        | Montgomery            | Habitat Degradation                     | Rural NPS                        |
| Coon Creek               | 0208        | Lincoln               | Habitat Degradation                     | Rural NPS                        |
| Coon Creek               | 3191        | Jasper                | Habitat Degradation                     | Rural NPS                        |
| Coon Creek               | 3194        | Dade                  | Habitat Degradation                     | Rural NPS                        |
| Coon Creek               | 3496        | Pettis                | Habitat Degradation                     | Rural NPS                        |
| Coon Creek, Tributary    | 0133        | Randolph              | Low Dissolved Oxygen                    | Wastewater discharge             |
| Coon Creek, Tributary    | 3497        | Lamine                | Habitat Degradation                     | Rural NPS                        |
| Coon Creek, Tributary    | 3498        | Lamine                | Habitat Degradation                     | Rural NPS                        |
| Coopers Creek            | 1222        | Henry                 | Habitat Degradation                     | Rural NPS                        |
| Coopers Creek, Tributary | 1223        | St. Clair             | Habitat Degradation                     | Rural NPS                        |
| Cotton Wood Creek        | 0671        | Chariton              | Habitat Degradation                     | Rural NPS                        |
| Cottonwood Creek         | 0410        | Lafayette             | Habitat Degradation                     | Rural NPS                        |
| Cottonwood Creek         | 0527        | Caldwell              | Habitat Degradation                     | Rural NPS                        |
| Cottonwood Creek         | 0548        | Livingston            | Habitat Degradation                     | Rural NPS                        |
| Cottonwood Creek         | 3651        | Vernon                | Habitat Degradation                     | Rural NPS                        |
| Cow Branch               | 0247        | Atchison              | Habitat Degradation                     | Rural NPS                        |
| Cow Creek                | 0895        | Saline                | Habitat Degradation                     | Rural NPS                        |
| Crabapple Creek          | 0365        | Ray                   | Habitat Degradation                     | Rural NPS                        |
| Crabapple Creek          | 0536        | Caldwell              | Habitat Degradation                     | Rural NPS                        |

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|---------------------------|-------------|-----------------------|---|-------------------------|
| Craven Ditch              | 2816        | Butler                | Habitat Degradation                     | Rural NPS               |
| Crawford Creek            | 1254        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 0116        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 0188        | Montgomery            | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 0330        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 0333        | Andrew                | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 0551        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 3307        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Crooked Creek             | 3434        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Crooked River             | 0371        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Crooked River             | 0376        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Crowder State Park Lake   | 7135        | Grundy                | Mercury                                 | Atmospheric Deposition  |
| Current River             | 2636        | Shannon               | Mercury                                 | Atmospheric Deposition  |
| Cypress Creek             | 0443        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Cypress Ditch #1          | 2616        | Ripley                | Habitat Degradation                     | Rural NPS               |
| Cypress Ditch Lateral     | 2981        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Cypress Ditch Lateral     | 2982        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Dan River                 | 2808        | Butler                | Habitat Degradation                     | Rural NPS               |
| Davis Creek               | 0144        | Audrain               | Habitat Degradation                     | Urban, Rural NPS        |
| Davis Creek               | 0255        | Holt                  | Habitat Degradation                     | Rural NPS               |
| Davis Creek               | 0907        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| Davis Creek Ditch         | 0253        | Holt                  | Habitat Degradation                     | Rural NPS               |
| Davis Creek, Tributary    | 0254        | Holt                  | Habitat Degradation                     | Rural NPS               |
| Dead Oak Creek            | 0539        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Deepwater Creek           | 1215        | Henry                 | Dissolved Oxygen                        | Upstream Impoundment    |
| Deepwater Creek           | 1217        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Deer Creek                | 1213        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Deer Ridge Community Lake | 7015        | Lewis                 | Mercury                                 | Atmospheric Deposition  |
| Des Moines River          | 0036        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Dicks Creek               | 0320        | Platte                | Habitat Degradation                     | Rural NPS               |
| Dicks Fork                | 3197        | Barton                | Habitat Degradation                     | Rural NPS               |
| Dillon Creek              | 0268        | Andrew                | Sediment                                | Limestone Quarry        |
| Ditch #1                  | 2974        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #1                  | 2987        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #1                  | 2988        | Bollinger             | Habitat Degradation                     | Rural NPS               |
| Ditch #1                  | 3028        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #1                  | 3045        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Ditch #1                  | 3048        | Scott                 | Habitat Degradation                     | Rural NPS               |

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|--------------------|-------------|-----------------------|---|-------------------------|
| Ditch #1           | 3050        | Stoddard              | Mercury                                 | Atmospheric Deposition  |
| Ditch #1           | 3052        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Ditch #1           | 3116        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #1           | 3117        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #1, Ditch to | 2975        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #1, Ditch to | 3054        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #1, Ditch to | 3055        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #1, Ditch to | 3056        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #2           | 2617        | Ripley                | Habitat Degradation                     | Rural NPS               |
| Ditch #2           | 2618        | Ripley                | Habitat Degradation                     | Rural NPS               |
| Ditch #2           | 2991        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #2           | 3018        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #2           | 3104        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #2, Ditch to | 2619        | Ripley                | Habitat Degradation                     | Rural NPS               |
| Ditch #3           | 2972        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #3           | 2973        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #3           | 2994        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #3           | 3019        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #3           | 3100        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #3, Ditch to | 3021        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #4           | 2995        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #4           | 3020        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #4           | 3046        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Ditch #4           | 3047        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Ditch #4           | 3099        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #5           | 2996        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #5           | 3015        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #5, Ditch to | 3014        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #6           | 2997        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #6           | 3022        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #6           | 3024        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #6           | 3096        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #6           | 3097        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #6, Ditch to | 3023        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #7           | 3013        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #7           | 3095        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #8           | 3094        | New Madrid            | Habitat Degradation                     | Rural NPS               |

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|----------------------|-------------|-----------------------|---|-------------------------|
| Ditch #9             | 3092        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #9             | 3093        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #10            | 2998        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #10            | 2999        | Wayne                 | Habitat Degradation                     | Rural NPS               |
| Ditch #10            | 3139        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #11            | 2986        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #17            | 3078        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #22            | 2772        | Butler                | Habitat Degradation                     | Rural NPS               |
| Ditch #23            | 2773        | Butler                | Habitat Degradation                     | Rural NPS               |
| Ditch #24            | 3062        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #24            | 3074        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #25            | 3068        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #25            | 3072        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #26            | 3070        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #26            | 3071        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #27            | 3069        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #30            | 3075        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #33            | 3065        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #33            | 3066        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #34            | 3061        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #34            | 3064        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #35            | 3063        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #36            | 3110        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #41            | 3090        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #42            | 3091        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #66            | 3036        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #66            | 3049        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #79            | 3035        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #80            | 3029        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #81            | 3102        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #84            | 3103        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #101           | 3083        | Bollinger             | Habitat Degradation                     | Rural NPS               |
| Ditch #101, Ditch to | 3084        | Bollinger             | Habitat Degradation                     | Rural NPS               |
| Ditch #104           | 3043        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #110           | 3073        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Ditch #258           | 3039        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditch #258           | 3040        | New Madrid            | Habitat Degradation                     | Rural NPS               |

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|----------------------------|-------------|-----------------------|---|-------------------------|
| Ditch #259                 | 3011        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Ditch #287                 | 3067        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Ditch #290                 | 3088        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #290                 | 3089        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Ditch #293                 | 3098        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Ditler Branch              | 3296        | Benton                | Habitat Degradation                     | Rural NPS               |
| Dog Creek                  | 0510        | Daviess               | Sediment                                | Limestone Quarry        |
| Double Branch              | 1298        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Douglas Branch             | 3648        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Doxies Creek               | 0679        | Howard                | Habitat Degradation                     | Rural NPS               |
| Dry Auglaize Creek         | 1144        | Camden                | Bacteria                                | Wastewater Discharge    |
| Dry Branch                 | 1406        | Greene                | Ammonia, Low Dissolved Oxygen           | Rural NPS               |
| Dry Branch                 | 3189        | Jasper                | Habitat Degradation                     | Rural NPS               |
| Dry Creek                  | 0940        | Saline                | Habitat Degradation                     | Rural NPS               |
| Drywood Creek              | 1314        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Duck Creek                 | 0689        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Duck Creek                 | 1210        | Benton                | Habitat Degradation                     | Rural NPS               |
| Dudley Main Ditch          | 2977        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Dudley Main Ditch          | 2978        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Duncan Creek               | 1311        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Dutchtown Ditch            | 2193        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Duval Creek                | 3199        | Jasper                | Habitat Degradation                     | Rural NPS               |
| Dyer Rock Creek            | 3438        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| East Bear Creek            | 0934        | Johnson               | Habitat Degradation                     | Rural NPS               |
| East Branch                | 1264        | Cass                  | Habitat Degradation                     | Rural NPS               |
| East Branch Crawford Creek | 1255        | Cass                  | Habitat Degradation                     | Rural NPS               |
| East Branch Elkhorn Creek  | 0288        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| East Branch Squaw Creek    | 0257        | Holt                  | Habitat Degradation                     | Rural NPS               |
| East Cow Creek             | 0896        | Saline                | Habitat Degradation                     | Rural NPS               |
| East Creek                 | 1265        | Cass                  | Habitat Degradation                     | Rural NPS               |
| East Creek, Tributary      | 1266        | Cass                  | Habitat Degradation                     | Rural NPS               |
| East Ditch #1              | 3107        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| East Ditch #1              | 3108        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| East Fork Bee Branch       | 3644        | Vernon                | Habitat Degradation                     | Rural NPS               |
| East Fork Big Creek        | 0446        | Harrison              | Habitat Degradation                     | Rural NPS               |
| East Fork Big Creek        | 0447        | Harrison              | Habitat Degradation                     | Rural NPS               |
| East Fork Big Muddy Creek  | 0463        | Harrison              | Habitat Degradation                     | Rural NPS               |

|                                      |             |                       |   |                         |
|--------------------------------------|-------------|-----------------------|---|-------------------------|
| East Fork Chariton River             | 0697        | Macon                 | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>                          | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| East Fork Crooked River              | 0373        | Ray                   | Habitat Degradation                     | Rural NPS               |
| East Fork Crooked River, Tributary   | 0374        | Ray                   | Habitat Degradation                     | Rural NPS               |
| East Fork Drywood Creek              | 1320        | Barton                | Low Dissolved Oxygen                    | Rural NPS               |
| East Fork Fishing River              | 0386        | Clay                  | Altered Aquatic Community               | Urban, Rural NPS        |
| East Fork Grand River                | 0467        | Worth                 | Habitat Degradation                     | Rural NPS               |
| East Fork Honey Creek                | 0555        | Mercer                | Habitat Degradation                     | Rural NPS               |
| East Fork Little Tarkio Creek        | 0249        | Atchison              | Habitat Degradation                     | Rural NPS               |
| East Fork Lost Creek                 | 0497        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| East Fork Postoak Creek              | 0932        | Johnson               | Habitat Degradation                     | Rural NPS               |
| East Fork Postoak Creek, Tributary   | 3429        | Johnson               | Habitat Degradation                     | Rural NPS               |
| East Fork Postoak Creek, Tributary   | 3428        | Johnson               | Habitat Degradation                     | Rural NPS               |
| East Fork Salt Pond Creek            | 0909        | Saline                | Habitat Degradation                     | Rural NPS               |
| East Fork Shoal Creek                | 0398        | Clay                  | Habitat Degradation                     | Rural NPS               |
| East Fork Sni-A-Bar Creek            | 0402        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| East Fork Sni-A-Bar Creek            | 3440        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| East Fork Sni-A-Bar Creek, Tributary | 3441        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| East Fork Sni-A-Bar Creek, Tributary | 3442        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| East Fork Walnut Creek               | 0688        | Randolph              | Habitat Degradation                     | Rural NPS               |
| East Yellow Creek                    | 0597        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Edmondson Creek                      | 0414        | Saline                | Habitat Degradation                     | Rural NPS               |
| Edmondson Creek, Tributary           | 0415        | Saline                | Habitat Degradation                     | Rural NPS               |
| Eight Mile Creek                     | 1262        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Eleven Point River                   | 2593        | Oregon                | Mercury                                 | Atmospheric Deposition  |
| Eleven Point River                   | 2597        | Oregon                | Mercury                                 | Atmospheric Deposition  |
| Eleven Point River                   | 2601        | Oregon                | Mercury                                 | Atmospheric Deposition  |
| Elk Branch                           | 3493        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Elk Chute Ditch                      | 3030        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Elk Creek                            | 0603        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Elk Creek                            | 0604        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Elk Creek                            | 3546        | Petis                 | Habitat Degradation                     | Rural NPS               |
| Elk Fork                             | 0858        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Elk Fork                             | 1278        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Elk Fork Salt River                  | 0130        | Monroe                | Habitat Degradation                     | Rural NPS               |

|                       |             |                       |   |                         |
|-----------------------|-------------|-----------------------|---|-------------------------|
| Elk Fork Salt River   | 0131        | Monroe                | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>           | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Elk Fork, Tributary   | 3503        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Elkhorn Creek         | 0287        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Elm Branch            | 1283        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Elm Creek             | 0620        | Putnam                | Habitat Degradation                     | Rural NPS               |
| Elm Creek             | 0645        | Schuyler              | Habitat Degradation                     | Rural NPS               |
| Elm Grove Branch      | 0331        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Fassnight Creek       | 3427        | Greene                | Habitat Degradation                     | Rural NPS               |
| Fellows Lake          | 7237        | Greene                | Mercury                                 | Atmospheric Deposition  |
| Femme Osage Creek     | 1605        | St. Charles           | Mercury                                 | Atmospheric Deposition  |
| Finney Creek          | 0902        | Saline                | Habitat Degradation                     | Rural NPS               |
| Finney Creek          | 0903        | Saline                | Habitat Degradation                     | Rural NPS               |
| Fire Branch           | 0375        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Fire Prairie Creek    | 3412        | Jackson               | Habitat Degradation                     | Rural NPS               |
| First Creek           | 0318        | Clay                  | Habitat Degradation                     | Rural NPS               |
| Fish Branch           | 0143        | Audrain               | Habitat Degradation                     | Rural NPS               |
| Fish Lake Ditch       | 3131        | Mississippi           | Habitat Degradation                     | Rural NPS               |
| Fish Trap Slough      | 3006        | Butler                | Habitat Degradation                     | Rural NPS               |
| Fishing River         | 0383        | Clay                  | Altered Aquatic Community               | Rural NPS               |
| Flagstaff Creek       | 0915        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Flat Creek            | 0129        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Flat Creek            | 0864        | Pettis                | Mercury                                 | Atmospheric Deposition  |
| Flat Creek            | 0892        | Saline                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3508        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3509        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3511        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3516        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3517        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3523        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3524        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3528        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3529        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Flat Creek, Tributary | 3530        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Fletchall Creek       | 0471        | Worth                 | Habitat Degradation                     | Rural NPS               |
| Florida Creek         | 0289        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Floyd Creek           | 0114        | Adair                 | Habitat Degradation                     | Rural NPS               |



|                             |             |                       |   |                         |
|-----------------------------|-------------|-----------------------|---|-------------------------|
| Fly Creek                   | 3636        | Vernon                | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>                 | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Fountain Farm Branch        | 3657        | Washington            | Habitat Degradation                     | Rural NPS               |
| Fox Creek                   | 0583        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Fox River                   | 0037        | Clark                 | Atrazine                                | Rural NPS               |
| Fox River                   | 0038        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Foxboro Lake                | 7382        | Franklin              | Mercury                                 | Atmospheric Deposition  |
| Galbreath Creek             | 0135        | Randolph              | Habitat Degradation                     | Rural NPS               |
| Gallinipper Creek           | 1226        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Gallinipper Creek           | 1227        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Garrison Fork               | 0407        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| Gasconade River             | 1455        | Pulaski               | Low Dissolved Oxygen, Fish Kill         | Rural NPS               |
| Gees Creek                  | 0590        | Grundy                | Habitat Degradation                     | Rural NPS               |
| Gillum Creek                | 1307        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Glendale Fork               | 3202        | Barton                | Habitat Degradation                     | Rural NPS               |
| Goose Creek                 | 0456        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Goose Creek                 | 0532        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Goose Creek                 | 2860        | Wayne                 | Nickel, Cobalt                          | Abandoned Metal Mine    |
| Goose Pond Ditch            | 3086        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Goose Pond Ditch, Tributary | 3087        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Grand River                 | 0430        | Daviess               | Habitat Degradation                     | Channelization          |
| Grand River, Old Channel    | 0512        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Grand River, Old Channel    | 0513        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Grand River, Old Channel    | 0517        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Grand River, Old Channel    | 0625        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Grand River, Old Channel    | 0628        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Grand River, Old Channel    | 0630        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Granddaddy's Creek          | 1216        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Grantham Creek              | 0478        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Grassy Creek                | 0072        | Lewis                 | Habitat Degradation                     | Rural NPS               |
| Grassy Creek                | 3538        | Saline                | Habitat Degradation                     | Rural NPS               |
| Greer Branch                | 0850        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Greer Creek                 | 1176        | Webster               | Low Dissolved Oxygen                    | Rural NPS               |
| Greys Lake                  | 0233        | Atchison              | Habitat Degradation                     | Rural NPS               |
| Grindstone Creek            | 0493        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Grindstone Creek            | 0502        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| Grindstone Creek, Tributary | 0504        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| Grove Creek                 | 0321        | Platte                | Habitat Degradation                     | Rural NPS               |

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|---------------------------------------|-------------|-----------------------|---|-------------------------|
| Guinns Creek                          | 0023        | Pike                  | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>                           | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Hackberry Branch                      | 3650        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Half Moon Bayou                       | 3017        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Harding Creek                         | 1273        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Harless Creek                         | 1270        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Harviell Ditch (#3)                   | 2615        | Butler                | Habitat Degradation                     | Rural NPS               |
| Hayzlett Branch                       | 0285        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Hazel Creek                           | 0642        | Adair                 | Habitat Degradation                     | Rural NPS               |
| Headwater Diversion Channel           | 2196        | Cape Girardeau        | Habitat Degradation                     | Rural NPS               |
| Heaths Creek, Tributary               | 3532        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Heaths Creek, Tributary               | 3533        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Heaths Creek, Tributary               | 3534        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Heaths Creek, Tributary               | 3535        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Heath's Creek, Tributary to Tributary | 3536        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Henry Creek                           | 0870        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Henry Creek                           | 3525        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Hickory Branch                        | 0596        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Hickory Creek                         | 0186        | Audrain               | Habitat Degradation                     | Rural NPS               |
| Hickory Creek                         | 0308        | Holt                  | Habitat Degradation                     | Rural NPS               |
| Hickory Creek                         | 0335        | Andrew                | Habitat Degradation                     | Rural NPS               |
| Hickory Creek                         | 0442        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Hickory Creek                         | 0490        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Hickory Creek                         | 0588        | Grundy                | Habitat Degradation                     | Rural NPS               |
| Hickory Creek, Tributary              | 0589        | Grundy                | Habitat Degradation                     | Rural NPS               |
| High Creek                            | 0229        | Atchison              | Habitat Degradation                     | Rural NPS               |
| High Creek Ditch                      | 0228        | Atchison              | Habitat Degradation                     | Rural NPS               |
| High Creek, Tributary                 | 0232        | Atchison              | Habitat Degradation                     | Rural NPS               |
| Highly Creek                          | 0307        | Holt                  | Habitat Degradation                     | Rural NPS               |
| Hightower Creek                       | 3646        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Hog Creek                             | 0660        | Adair                 | Habitat Degradation                     | Rural NPS               |
| Hogan's Fork                          | 3425        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Hogan's Fork, Tributary               | 3426        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Holland Branch                        | 0350        | Platte                | Habitat Degradation                     | Rural NPS               |
| Holtzclaw Creek                       | 0351        | Clay                  | Habitat Degradation                     | Rural NPS               |
| Honey Creek                           | 0042        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Honey Creek                           | 0338        | Nodaway               | Habitat Degradation                     | Rural NPS               |

|                           |             |                       |   |   |
|---------------------------|-------------|-----------------------|---|---|
| Honey Creek               | 0509        | Daviess               | Habitat Degradation                     | Rural NPS                               |
| <b>Name</b>               | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>                 |
| Honey Creek               | 0554        | Grundy                | Habitat Degradation                     | Rural NPS                               |
| Honey Creek               | 0888        | Cooper                | Habitat Degradation                     | Rural NPS                               |
| Honey Creek               | 0919        | Johnson               | Habitat Degradation                     | Rural NPS                               |
| Honey Creek               | 1251        | Henry                 | Low Dissolved Oxygen                    | Rural NPS                               |
| Honey Cypress Ditch       | 3121        | Dunklin               | Habitat Degradation                     | Rural NPS                               |
| Hoover Creek              | 0127        | Macon                 | Habitat Degradation                     | Rural NPS                               |
| Horse Creek               | 1348        | Cedar                 | Low Dissolved Oxygen                    | Rural NPS                               |
| Horse Fork                | 0354        | Clinton               | Habitat Degradation                     | Rural NPS                               |
| Hough Park Lake           | 7388        | Cole                  | Mercury                                 | Atmospheric Deposition                  |
| Hubble Creek, Old Channel | 3053        | Cape Girardeau        | Habitat Degradation                     | Rural NPS                               |
| Huff Creek                | 0306        | Nodaway               | Habitat Degradation                     | Rural NPS                               |
| Huffstetter Lateral       | 3101        | Stoddard              | Habitat Degradation                     | Rural NPS                               |
| Hunnewell Lake            | 7029        | Shelby                | Mercury                                 | Atmospheric Deposition                  |
| Hurricane Branch          | 0435        | Daviess               | Habitat Degradation                     | Rural NPS                               |
| Hurricane Creek           | 0632        | Carroll               | Habitat Degradation                     | Rural NPS                               |
| Indian Branch             | 0432        | Livingston            | Habitat Degradation                     | Rural NPS                               |
| Indian Creek              | 0062        | Scotland              | Habitat Degradation                     | Rural NPS                               |
| Indian Creek              | 0104        | Monroe                | Habitat Degradation                     | Rural NPS                               |
| Indian Creek              | 0171        | Pike                  | Habitat Degradation                     | Rural NPS                               |
| Indian Creek              | 0477        | Gentry                | Habitat Degradation                     | Rural NPS                               |
| Indian Creek              | 0573        | Harrison              | Habitat Degradation                     | Rural NPS                               |
| Indian Creek Lake         | 7389        | Livingston            | Mercury                                 | Atmospheric Deposition                  |
| Indian Hills Lake         | 7288        | Crawford              | Mercury                                 | Atmospheric Deposition                  |
| Iowa Ditch                | 0234        | Atchison              | Habitat Degradation                     | Rural NPS                               |
| Irvins Branch             | 0494        | Dekalb                | Habitat Degradation                     | Rural NPS                               |
| Irwin Creek               | 0558        | Mercer                | Habitat Degradation                     | Rural NPS                               |
| Ishmael Branch            | 1964        | Washington            | Habitat Degradation                     | Abandoned Barite Mined Lands, Urban NPS |
| Island Creek              | 0485        | Gentry                | Habitat Degradation                     | Rural NPS                               |
| Jacobs Branch             | 3223        | Newton                | Zinc                                    | Abandoned Lead –Zinc Mines              |
| James Bayou               | 3128        | Mississippi           | Habitat Degradation                     | Rural NPS                               |
| James Bayou               | 3129        | Mississippi           | Habitat Degradation                     | Rural NPS                               |
| Jamesport Community Lake  | 7105        | Daviess               | Mercury                                 | Atmospheric Deposition                  |
| Jenkins Creek             | 0286        | Nodaway               | Habitat Degradation                     | Rural NPS                               |
| Johns Branch              | 0184        | Pike                  | Habitat Degradation                     | Rural NPS                               |

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|--------------------------|-------------|-----------------------|---|---------------------------|
| Jordan Branch            | 0275        | Platte                | Habitat Degradation                     | Rural NPS                 |
| <b>Name</b>              | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>   |
| Jordan Creek             | 0329        | Dekalb                | Habitat Degradation                     | Rural NPS                 |
| Jordan Creek             | 0911        | Saline                | Habitat Degradation                     | Rural NPS                 |
| Jowler Creek             | 3571        | Platte                | Habitat Degradation                     | Rural NPS                 |
| Keeney Creek             | 0384        | Ray                   | Habitat Degradation                     | Rural NPS                 |
| Kettle Creek             | 0516        | Daviess               | Habitat Degradation                     | Rural NPS                 |
| Kimsey Creek             | 0262        | Holt                  | Habitat Degradation                     | Rural NPS                 |
| Kimsey Creek             | 0263        | Holt                  | Habitat Degradation                     | Rural NPS                 |
| Kimsey Creek             | 0264        | Holt                  | Habitat Degradation                     | Rural NPS                 |
| Kinnemore Ditch          | 3122        | Dunklin               | Habitat Degradation                     | Rural NPS                 |
| Kitten Creek             | 1334        | Vernon                | Habitat Degradation                     | Rural NPS                 |
| Knob Creek               | 1303        | Bates                 | Habitat Degradation                     | Rural NPS                 |
| Kyle Creek               | 3195        | Dade                  | Habitat Degradation                     | Rural NPS                 |
| Labelle Lake #2          | 7023        | Lewis                 | Mercury                                 | Atmospheric Deposition    |
| Ladies Branch            | 1332        | Vernon                | Habitat Degradation                     | Rural NPS                 |
| Lake Creek               | 0359        | Chariton              | Habitat Degradation                     | Rural NPS                 |
| Lake Creek               | 0431        | Livingston            | Habitat Degradation                     | Rural NPS                 |
| Lake Creek               | 0875        | Pettis                | Habitat Degradation                     | Rural NPS                 |
| Lake Creek               | 3527        | Pettis                | Habitat Degradation                     | Rural NPS                 |
| Lake Creek, Tributary    | 0876        | Pettis                | Habitat Degradation                     | Rural NPS                 |
| Lake Creek, Tributary    | 3514        | Pettis                | Habitat Degradation                     | Rural NPS                 |
| Lake of the Ozarks       | 7205        | Camden                | pH                                      | Discharge from Truman Dam |
| Lake of the Woods        | 7436        | Boone                 | Mercury                                 | Atmospheric Deposition    |
| Lake Slough              | 2774        | Butler                | Habitat Degradation                     | Rural NPS                 |
| Lake Ste. Louise         | 7055        | St. Charles           | Bacteria                                | Urban NPS                 |
| Lake Winnebago           | 7212        | Cass                  | Mercury                                 | Atmospheric Deposition    |
| Landon Branch            | 1329        | Vernon                | Habitat Degradation                     | Rural NPS                 |
| Larry Creek              | 0507        | Daviess               | Habitat Degradation                     | Rural NPS                 |
| Lateral #2               | 3025        | Pemiscot              | Habitat Degradation                     | Rural NPS                 |
| Lateral #2 to Main Ditch | 3106        | Stoddard              | Habitat Degradation                     | Rural NPS                 |
| Lateral #27              | 3027        | Dunklin               | Habitat Degradation                     | Rural NPS                 |
| Lateral #27              | 3033        | Pemiscot              | Habitat Degradation                     | Rural NPS                 |
| Lateral #4               | 3149        | Scott                 | Habitat Degradation                     | Rural NPS                 |
| Lateral Ditch            | 3008        | Butler                | Habitat Degradation                     | Rural NPS                 |
| Lateral Ditch            | 3010        | Butler                | Habitat Degradation                     | Rural NPS                 |
| Lateral Ditch #1         | 3114        | Dunklin               | Habitat Degradation                     | Rural NPS                 |
| Lateral Ditch #2         | 3113        | Dunklin               | Habitat Degradation                     | Rural NPS                 |

|                                 |             |                       |   |                                       |
|---------------------------------|-------------|-----------------------|---|---------------------------------------|
| Lateral Ditch #37               | 3007        | Butler                | Habitat Degradation                     | Rural NPS                             |
| <b>Name</b>                     | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>               |
| Lead Creek                      | 0178        | Lincoln               | Altered Fish Community                  | Rural NPS                             |
| Lead Creek                      | 0179        | Lincoln               | Altered Fish Community                  | Rural NPS                             |
| Lee Rowe Ditch                  | 3137        | Mississippi           | Habitat Degradation                     | Rural NPS                             |
| Leeper Creek                    | 0624        | Livingston            | Habitat Degradation                     | Rural NPS                             |
| Lewis Slough                    | 0235        | Atchison              | Habitat Degradation                     | Rural NPS                             |
| Lick Creek                      | 0150        | Ralls                 | Habitat Degradation                     | Rural NPS                             |
| Lick Creek                      | 0256        | Cass                  | Habitat Degradation                     | Rural NPS                             |
| Lick Creek Ditch                | 2980        | Stoddard              | Habitat Degradation                     | Rural NPS                             |
| Lick Fork                       | 0514        | Daviess               | Habitat Degradation                     | Rural NPS                             |
| Lick Fork                       | 0515        | Daviess               | Habitat Degradation                     | Rural NPS                             |
| Lick Fork                       | 1024        | Boone                 | Sediment                                | Mining                                |
| Lick Fork                       | 3439        | Lafayette             | Habitat Degradation                     | Rural NPS                             |
| Lincoln Creek                   | 0280        | Andrew                | Habitat Degradation                     | Rural NPS                             |
| Lincoln Creek, Tributary        | 0281        | Andrew                | Habitat Degradation                     | Rural NPS                             |
| Linn Creek                      | 0041        | Clark                 | Habitat Degradation                     | Rural NPS                             |
| Little Blackwater Creek         | 0922        | Johnson               | Habitat Degradation                     | Rural NPS                             |
| Little Blue River               | 0423        | Jackson               | Mercury                                 | Atmospheric Deposition                |
| Little Blue River               | 0424        | Jackson               | Habitat Degradation                     | Rural NPS                             |
| Little Brush Creek              | 0673        | Macon                 | Habitat Degradation                     | Rural NPS                             |
| Little Chariton River           | 0678        | Chariton              | Habitat Degradation                     | Rural NPS                             |
| Little Clear Creek              | 1340        | St. Clair             | Habitat Degradation                     | Rural NPS                             |
| Little Clear Creek, Tributary   | 1341        | St. Clair             | Habitat Degradation                     | Rural NPS                             |
| Little Coon Creek               | 3192        | Barton                | Habitat Degradation                     | Rural NPS                             |
| Little Creek                    | 0452        | Harrison              | Habitat Degradation                     | Rural NPS                             |
| Little Creek                    | 0923        | Johnson               | Habitat Degradation                     | Rural NPS                             |
| Little Crooked Creek            | 0118        | Shelby                | Habitat Degradation                     | Rural NPS                             |
| Little Deer Creek               | 1277        | Bates                 | Habitat Degradation                     | Rural NPS                             |
| Little Drywood Creek            | 1326        | Barton                | Low Dissolved Oxygen, pH                | Rural NPS, Abandoned Coal Mined Lands |
| Little Drywood Creek, Tributary | 3649        | Vernon                | Habitat Degradation                     | Rural NPS                             |
| Little East Fork Locust Creek   | 0609        | Sullivan              | Habitat Degradation                     | Rural NPS                             |
| Little Fabius River             | 0079        | Knox                  | Habitat Degradation                     | Rural NPS                             |
| Little Fox River                | 0039        | Clark                 | Habitat Degradation                     | Rural NPS                             |
| Little Fox River                | 0040        | Scotland              | Habitat Degradation                     | Rural NPS                             |
| Little Horseshoe Creek          | 3690        | Lafayette             | Habitat Degradation                     | Rural NPS                             |

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|---|-------------|-----------------------|---|-------------------------|
| Little Hurricane Creek                    | 0633        | Carroll               | Habitat Degradation                       | Rural NPS               |
| <b>Name</b>                               | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b>   | <b>Potential Source</b> |
| Little Lead Creek                         | 0181        | Lincoln               | Altered Fish Community                    | Rural NPS               |
| Little Maries River                       | 1085        | Maries                | Habitat Degradation, Low Dissolved Oxygen | Rural NPS               |
| Little Monegaw Creek                      | 1232        | St. Clair             | Habitat Degradation                       | Rural NPS               |
| Little Muddy Creek                        | 0440        | Daviess               | Habitat Degradation                       | Rural NPS               |
| Little Muddy Creek                        | 0559        | Mercer                | Habitat Degradation                       | Rural NPS               |
| Little Muddy Creek                        | 0856        | Pettis                | Color                                     | Industrial Discharge    |
| Little Muddy Creek, Tributary             | 3491        | Pettis                | Habitat Degradation                       | Rural NPS               |
| Little Muddy Creek, Tributary             | 3489        | Pettis                | Habitat Degradation                       | Rural NPS               |
| Little Mussel Creek                       | 0675        | Adair                 | Habitat Degradation                       | Rural NPS               |
| Little No Creek                           | 0552        | Grundy                | Habitat Degradation                       | Rural NPS               |
| Little North Fork Spring River            | 3200        | Jasper                | Habitat Degradation                       | Rural NPS               |
| Little North Fork Spring River, Tributary | 3201        | Barton                | Habitat Degradation                       | Rural NPS               |
| Little Osage River                        | 1310        | Vernon                | Habitat Degradation                       | Rural NPS               |
| Little Osage River                        | 3674        | Vernon                | Habitat Degradation                       | Rural NPS               |
| Little Otter Creek                        | 0120        | Monroe                | Habitat Degradation                       | Rural NPS               |
| Little Otter Creek                        | 0526        | Caldwell              | Habitat Degradation                       | Rural NPS               |
| Little Platte River                       | 0315        | Platte                | Habitat Degradation                       | Rural NPS               |
| Little Platte River                       | 0352        | Clinton               | Habitat Degradation                       | Rural NPS               |
| Little River                              | 0562        | Mercer                | Habitat Degradation                       | Rural NPS               |
| Little River, Old Channel                 | 3041        | New Madrid            | Habitat Degradation                       | Rural NPS               |
| Little Shaver Creek                       | 0863        | Pettis                | Habitat Degradation                       | Rural NPS               |
| Little Shoal Creek                        | 0651        | Putnam                | Habitat Degradation                       | Rural NPS               |
| Little Shoal Creek                        | 3325        | Clay                  | Habitat Degradation                       | Rural NPS               |
| Little Sni-A-Bar Creek                    | 0403        | Lafayette             | Habitat Degradation                       | Rural NPS               |
| Little Sni-A-Bar Creek                    | 0404        | Lafayette             | Habitat Degradation                       | Rural NPS               |
| Little Tabo Creek                         | 0409        | Lafayette             | Habitat Degradation                       | Rural NPS               |
| Little Tarkio Creek                       | 0248        | Holt                  | Habitat Degradation                       | Rural NPS               |
| Little Tarkio Creek                       | 0250        | Atchison              | Habitat Degradation                       | Rural NPS               |
| Little Tarkio Creek, Old Channel          | 0260        | Holt                  | Habitat Degradation                       | Rural NPS               |
| Little Tarkio Creek, Old Channel          | 0261        | Holt                  | Habitat Degradation                       | Rural NPS               |
| Little Tarkio Ditch                       | 0251        | Holt                  | Habitat Degradation                       | Rural NPS               |
| Little Tavern Creek                       | 1076        | Maries                | Bacteria                                  | Rural NPS               |
| Little Tebo Creek                         | 1205        | Benton                | Habitat Degradation                       | Rural NPS               |

|                                |             |                       |   |                         |
|--------------------------------|-------------|-----------------------|---|-------------------------|
| Little Tebo Creek, Tributary   | 3295        | Benton                | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>                    | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Little Tebo Creek, Tributary   | 3304        | Benton                | Habitat Degradation                     | Rural NPS               |
| Little Third Fork Platte River | 0328        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| Little Walnut Creek            | 0662        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Little Walnut Creek            | 0938        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Little Wyaconda River          | 0052        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Little Wyaconda River          | 0053        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Littleby Creek                 | 0147        | Audrain               | Habitat Degradation                     | Rural NPS               |
| Log Creek                      | 0533        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Logan Creek                    | 2763        | Reynolds              | Mercury                                 | Atmospheric Deposition  |
| Long Branch                    | 0139        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 0243        | Atchison              | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 0340        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 0488        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 0602        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 0677        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 0857        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 1843        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Long Branch                    | 3430        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Long Branch Lake               | 7171        | Macon                 | Mercury                                 | Atmospheric Deposition  |
| Long Branch, Tributary         | 3502        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Long Creek                     | 0535        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Long Creek                     | 0669        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Long Grove Branch              | 0851        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Long Grove Branch              | 3531        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Lost Creek                     | 0495        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| Lost Creek                     | 0643        | Schuyler              | Habitat Degradation                     | Rural NPS               |
| Lotts Creek                    | 0466        | Worth                 | Habitat Degradation                     | Rural NPS               |
| Lumpkin Creek                  | 0425        | Jackson               | Habitat Degradation                     | Rural NPS               |
| Mace Creek                     | 0267        | Andrew                | Habitat Degradation                     | Rural NPS               |
| Main Ditch                     | 3026        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Main Ditch                     | 3112        | Dunklin               | Habitat Degradation                     | Rural NPS               |
| Main Ditch                     | 3115        | Stoddard              | Habitat Degradation                     | Rural NPS               |
| Main Ditch #8                  | 3031        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Main Ditch #8                  | 3032        | Pemiscot              | Habitat Degradation                     | Rural NPS               |
| Malaruni Creek                 | 0010        | Ralls                 | Habitat Degradation                     | Rural NPS               |
| Malone Creek                   | 2277        | Bollinger             | Habitat Degradation                     | Rural NPS               |

|                            |             |                       |   |                            |
|----------------------------|-------------|-----------------------|---|----------------------------|
| Maple Slough               | 3140        | Mississippi           | Habitat Degradation                     | Rural NPS                  |
| <b>Name</b>                | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>    |
| Marais Des Cygnes River    | 1297        | Bates                 | Habitat Degradation                     | Rural NPS                  |
| Marlin Creek               | 0852        | Pettis                | Habitat Degradation                     | Rural NPS                  |
| Marlin Creek               | 3485        | Pettis                | Habitat Degradation                     | Rural NPS                  |
| Marlowe Creek              | 0474        | Worth                 | Habitat Degradation                     | Rural NPS                  |
| Marlowe Creek              | 0475        | Worth                 | Habitat Degradation                     | Rural NPS                  |
| Marmaton River             | 1308        | Vernon                | Low Dissolved Oxygen                    | Rural NPS                  |
| Marrowbone Creek           | 0508        | Daviess               | Habitat Degradation                     | Rural NPS                  |
| Marrowbone Creek           | 0511        | Daviess               | Habitat Degradation                     | Rural NPS                  |
| Marshalls Creek            | 1221        | Henry                 | Habitat Degradation                     | Rural NPS                  |
| Martin Creek               | 0570        | Gentry                | Habitat Degradation                     | Rural NPS                  |
| Mass Creek                 | 0302        | Nodaway               | Habitat Degradation                     | Rural NPS                  |
| Massey Creek               | 1267        | Cass                  | Habitat Degradation                     | Rural NPS                  |
| Massey Creek, Tributary    | 1268        | Cass                  | Habitat Degradation                     | Rural NPS                  |
| May Branch                 | 3540        | Pettis                | Habitat Degradation                     | Rural NPS                  |
| McCarty Creek              | 1338        | Vernon                | pH                                      | Unknown                    |
| McElroy Creek              | 0231        | Atchison              | Habitat Degradation                     | Rural NPS                  |
| McGee Branch               | 3510        | Pettis                | Habitat Degradation                     | Rural NPS                  |
| McGuire Branch             | 0324        | Clinton               | Habitat Degradation                     | Rural NPS                  |
| McKenzie Creek             | 3643        | Wayne                 | Habitat Degradation                     | Rural NPS                  |
| McKill Creek               | 1321        | Vernon                | pH                                      | Abandoned Coal Mined Lands |
| McKill Creek               | 1324        | Vernon                | Habitat Degradation                     | Rural NPS                  |
| McLean Creek               | 0031        | Lincoln               | Habitat Degradation                     | Rural NPS                  |
| Medicine Creek             | 0616        | Livingston            | Habitat Degradation                     | Rural NPS                  |
| Melton Creek               | 3637        | Vernon                | Habitat Degradation                     | Rural NPS                  |
| Meramec River              | 1841        | Franklin              | Mercury                                 | Atmospheric Deposition     |
| Meramec River              | 1846        | Crawford              | Mercury                                 | Atmospheric Deposition     |
| Meramec River              | 2183        | St. Louis             | Mercury                                 | Atmospheric Deposition     |
| Meramec River              | 2185        | St. Louis             | Lead                                    | Abandoned Lead Mines       |
| Merrills Branch            | 0084        | Marion                | Habitat Degradation                     | Rural NPS                  |
| Miami Creek                | 1302        | Bates                 | Habitat Degradation                     | Rural NPS                  |
| Middle Branch Squaw Creek  | 0258        | Holt                  | Habitat Degradation                     | Rural NPS                  |
| Middle Creek               | 0567        | Grundy                | Habitat Degradation                     | Rural NPS                  |
| Middle Fabius River        | 0063        | Lewis                 | Habitat Degradation, Atrazine           | Rural NPS                  |
| Middle Fork Black River    | 2744        | Reynolds              | Lead                                    | Active Lead Mines          |
| Middle Fork Chariton River | 0691        | Chariton              | Habitat Degradation                     | Rural NPS                  |



|                                    |             |                       |   |                                       |
|------------------------------------|-------------|-----------------------|---|---------------------------------------|
| Middle Fork Chariton River         | 0698        | Macon                 | Habitat Degradation                     | Rural NPS                             |
| <b>Waterbody</b>                   | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>               |
| Middle Fork Grand River            | 0472        | Worth                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Grand River, Tributary | 0473        | Worth                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Lost Creek             | 0496        | Dekalb                | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Salt River             | 0123        | Macon                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Salt River, Tributary  | 0125        | Macon                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Tebo Creek, Tributary  | 1289        | Henry                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Tebo Creek, Tributary  | 1286        | Henry                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Tebo Creek, Tributary  | 1287        | Henry                 | Habitat Degradation                     | Rural NPS                             |
| Middle Fork Tebo Creek, Tributary  | 1285        | Henry                 | Habitat Degradation                     | Rural NPS                             |
| Middle Tarkio Creek                | 0245        | Atchison              | Habitat Degradation                     | Rural NPS                             |
| Mill Creek                         | 0159        | Lincoln               | Habitat Degradation                     | Rural NPS                             |
| Mill Creek                         | 0265        | Holt                  | Habitat Degradation                     | Rural NPS                             |
| Mill Creek                         | 0266        | Holt                  | Habitat Degradation                     | Rural NPS                             |
| Mill Creek                         | 0301        | Nodaway               | Habitat Degradation                     | Rural NPS                             |
| Mill Creek                         | 0529        | Caldwell              | Habitat Degradation                     | Rural NPS                             |
| Mill Creek                         | 2124        | Washington            | Habitat Degradation                     | Wastewater Discharge                  |
| Mill Creek                         | 3311        | Cass                  | Habitat Degradation                     | Rural NPS                             |
| Mill Creek, Tributary              | 0303        | Nodaway               | Habitat Degradation                     | Rural NPS                             |
| Milligan Creek                     | 0134        | Monroe                | Habitat Degradation                     | Rural NPS                             |
| Mineral Creek                      | 3422        | Johnson               | Habitat Degradation                     | Rural NPS                             |
| Mineral Creek, Tributary           | 3423        | Johnson               | Habitat Degradation                     | Rural NPS                             |
| Mingo Ditch                        | 2983        | Stoddard              | Habitat Degradation                     | Rural NPS                             |
| Missouri River                     | 0226        | Holt                  | Habitat Degradation                     | Channelization                        |
| Missouri River                     | 0356        | Carroll               | Habitat Degradation                     | Channelization                        |
| Missouri River                     | 0701        | Callaway              | Habitat Degradation                     | Channelization                        |
| Missouri River                     | 1604        | St. Charles           | Habitat Degradation                     | Channelization                        |
| Missouri River, Tributary          | 0411        | Saline                | Habitat Degradation                     | Rural NPS                             |
| Moccasin Creek                     | 0483        | Gentry                | Habitat Degradation                     | Rural NPS                             |
| Monegaw Creek                      | 1233        | St. Clair             | Habitat Degradation                     | Rural NPS                             |
| Monegaw Creek                      | 1234        | St. Clair             | Low Dissolved Oxygen, Sulfate           | Rural NPS, Abandoned Coal Mined Lands |
| Moore Branch                       | 1328        | Vernon                | Habitat Degradation                     | Rural NPS                             |
| Moore Branch                       | 1315        | Vernon                | Habitat Degradation                     | Rural NPS                             |

|                        |             |                       |   |                         |
|------------------------|-------------|-----------------------|---|-------------------------|
| Moore's Branch         | 1316        | Vernon                | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>            | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Mormon Fork            | 1275        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Moss Creek             | 0369        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Moss Creek, Tributary  | 0370        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Mound Creek            | 0626        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Mouse Creek            | 0426        | Jackson               | Habitat Degradation                     | Rural NPS               |
| Mozingo Creek          | 0343        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Mozingo Lake           | 7402        | Nodaway               | Mercury                                 | Atmospheric Deposition  |
| Mud Creek              | 0128        | Randolph              | Habitat Degradation                     | Rural NPS               |
| Mud Creek              | 0538        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Mud Creek              | 0541        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Mud Creek Ditch        | 0537        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Mud Creek, Old Channel | 0547        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Mud Creek, Tributary   | 0546        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Mud Creek, Tributary   | 0545        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Mud Creek, Tributary   | 0544        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Mud Ditch              | 3124        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0291        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0434        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0492        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0557        | Mercer                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0607        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0617        | Livingston            | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 0898        | Saline                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 1309        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek            | 3308        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Muddy Creek, Tributary | 0618        | Grundy                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek, Tributary | 3488        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek, Tributary | 3492        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek, Tributary | 3494        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek, Tributary | 3495        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Muddy Creek, Tributary | 3499        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Muddy Fork             | 0391        | Clay                  | Altered Aquatic Community               | Rural NPS               |
| Mulberry Creek         | 3635        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Mulkey Creek           | 0916        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Muncas Creek           | 0692        | Chariton              | Habitat Degradation                     | Rural NPS               |

|                                |             |                       |   |                          |
|--------------------------------|-------------|-----------------------|---|--------------------------|
| Muncas Creek                   | 0693        | Randolph              | Habitat Degradation                     | Rural NPS                |
| <b>Name</b>                    | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>  |
| Narrows Creek                  | 0126        | Macon                 | Habitat Degradation                     | Rural NPS                |
| Naylor Creek                   | 0277        | Platte                | Habitat Degradation                     | Rural NPS                |
| Neals Creek                    | 2752        | Iron                  | Lead, Nickel in Stream Sediments        | Abandoned Lead-Zinc Mine |
| New #7 Chute                   | 3157        | Mississippi           | Habitat Degradation                     | Rural NPS                |
| New Franklin Ditch             | 3016        | Pemiscot              | Habitat Degradation                     | Rural NPS                |
| New Hope Cr.                   | 0392        | Clay                  | Habitat Degradation                     | Rural NPS                |
| Nichols Creek                  | 0309        | Holt                  | Habitat Degradation                     | Rural NPS                |
| Nichols Creek, Tributary       | 0310        | Holt                  | Habitat Degradation                     | Rural NPS                |
| Nishnabotna River              | 0227        | Atchison              | Habitat Degradation                     | Rural NPS                |
| Nishnabotna River, Old Channel | 0238        | Atchison              | Habitat Degradation                     | Rural NPS                |
| Nishnabotna River, Old Channel | 0240        | Atchison              | Habitat Degradation                     | Rural NPS                |
| Noblett Lake                   | 7316        | Douglas               | Mercury                                 | Atmospheric Deposition   |
| Nodaway River                  | 0279        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0284        | Holt                  | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0297        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0300        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0305        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0311        | Holt                  | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0296        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0299        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0304        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0294        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0295        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Nodaway River, Old Channel     | 0298        | Nodaway               | Habitat Degradation                     | Rural NPS                |
| Norris Creek                   | 1252        | Henry                 | Habitat Degradation                     | Rural NPS                |
| North Cut Ditch                | 3143        | Scott                 | Habitat Degradation                     | Rural NPS                |
| North Cut Ditch                | 3145        | Scott                 | Habitat Degradation                     | Rural NPS                |
| North Cut Ditch, Tributary     | 3144        | Scott                 | Habitat Degradation                     | Rural NPS                |
| North Cut Ditch, Tributary     | 3148        | Scott                 | Habitat Degradation                     | Rural NPS                |
| North Deepwater Creek          | 1218        | Henry                 | Habitat Degradation                     | Rural NPS                |
| North Dry Sac River            | 1392        | Polk                  | Low Dissolved Oxygen                    | Rural NPS                |
| North Fabius River             | 0056        | Lewis                 | Habitat Degradation, Atrazine           | Rural NPS                |
| North Fabius River             | 0059        | Schuyler              | Habitat Degradation                     | Rural NPS                |

|  |             |                       |   |                              |
|--|-------------|-----------------------|---|------------------------------|
| North Fork Batts Creek                   | 0681        | Howard                | Habitat Degradation                     | Rural NPS                    |
| <b>Name</b>                              | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>      |
| North Fork Blackwater River              | 0920        | Johnson               | Habitat Degradation                     | Rural NPS                    |
| North Fork Finney Creek                  | 0904        | Saline                | Habitat Degradation                     | Rural NPS                    |
| North Fork Middle Fabius River           | 0065        | Scotland              | Habitat Degradation                     | Rural NPS                    |
| North Fork North Fabius River            | 0058        | Scotland              | Habitat Degradation                     | Rural NPS                    |
| North Fork Salt River                    | 0110        | Shelby                | Habitat Degradation                     | Rural NPS                    |
| North Fork Salt River                    | 0113        | Adair                 | Habitat Degradation                     | Rural NPS                    |
| North Fork South Fabius River            | 0075        | Knox                  | Habitat Degradation                     | Rural NPS                    |
| North Fork Spring River, Tributary       | 3196        | Barton                | Habitat Degradation                     | Rural NPS                    |
| North Mud Creek                          | 0540        | Caldwell              | Habitat Degradation                     | Rural NPS                    |
| North River                              | 0080        | Marion                | Habitat Degradation                     | Rural NPS                    |
| North River                              | 0083        | Shelby                | Habitat Degradation                     | Rural NPS                    |
| North Wyaconda R.iver                    | 0049        | Scotland              | Habitat Degradation                     | Rural NPS                    |
| North Wyaconda River                     | 0048        | Scotland              | Habitat Degradation                     | Rural NPS                    |
| Norvey Creek                             | 0344        | Nodaway               | Habitat Degradation                     | Rural NPS                    |
| Number 13 Elk Chute                      | 3034        | Pemiscot              | Habitat Degradation                     | Rural NPS                    |
| Old Channel Nishnabotna River, Tributary | 0239        | Atchison              | Habitat Degradation                     | Rural NPS                    |
| Old Channel Nishnabotna River, Tributary | 0241        | Atchison              | Habitat Degradation                     | Rural NPS                    |
| Old Mines Creek, Tributary               | 2114        | Washington            | Sediment Deposition                     | Abandoned Barite Mined Lands |
| Old Mines Creek, Tributary               | 2113        | Washington            | Sediment Deposition                     | Abandoned Barite Mined Lands |
| Old Town Branch                          | 1331        | Vernon                | Habitat Degradation                     | Rural NPS                    |
| Old Town Branch, Tributary               | 3647        | Vernon                | Habitat Degradation                     | Rural NPS                    |
| Olive Branch                             | 3504        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| One Hundred and Two River                | 0342        | Nodaway               | Habitat Degradation, Atrazine           | Rural NPS                    |
| Opossum Creek                            | 3190        | Jasper                | Habitat Degradation                     | Rural NPS                    |
| Osage Fork                               | 1472        | Laclede               | Bacteria                                | Unknown                      |
| Otter Creek                              | 0119        | Monroe                | Habitat Degradation                     | Rural NPS                    |
| Otter Creek                              | 0525        | Caldwell              | Habitat Degradation                     | Rural NPS                    |
| Otter Creek                              | 0887        | Cooper                | Habitat Degradation                     | Rural NPS                    |
| Otter Slough                             | 3044        | New Madrid            | Habitat Degradation                     | Rural NPS                    |
| Otter Slough Ditch                       | 2976        | Stoddard              | Habitat Degradation                     | Rural NPS                    |
| Owens Creek                              | 1274        | Cass                  | Habitat Degradation                     | Rural NPS                    |

|                           |             |                       |   |                         |
|---------------------------|-------------|-----------------------|---|-------------------------|
| Owl Creek                 | 3572        | Platte                | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>               | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Painter Creek             | 3486        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Palmer Creek              | 0357        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Palmer Creek              | 0358        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Panther Creek             | 0460        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Panther Creek             | 0521        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Panther Creek             | 0575        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Panther Creek             | 0576        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Panther Creek             | 1260        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Panther Creek             | 1295        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Panther Creek, Tributary  | 0522        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Parker Branch             | 1304        | Bates                 | Habitat Degradation                     | Rural NPS               |
| Parson Creek              | 0614        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Parson Creek              | 0615        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Pass Branch               | 0900        | Saline                | Habitat Degradation                     | Rural NPS               |
| Peavine Creek             | 0914        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Peddler Creek             | 0469        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Peddler Creek             | 0470        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Pedlar Creek              | 0283        | Andrew                | Habitat Degradation                     | Rural NPS               |
| Peno Creek                | 0099        | Pike                  | Low Dissolved Oxygen                    | Rural NPS               |
| Pepper Creek              | 0868        | Pettis                | Habitat Degradation                     | Rural NPS               |
| Perche Creek              | 1005        | Boone                 | Habitat Degradation                     | Rural NPS               |
| Petite Saline Creek       | 0785        | Cooper                | Low Dissolved Oxygen                    | Rural NPS               |
| Pettis Creek              | 3193        | Barton                | Habitat Degradation                     | Rural NPS               |
| Pigeon Creek              | 0349        | Buchanan              | Habitat Degradation                     | Rural NPS               |
| Pigeon Roost Creek        | 0109        | Monroe                | Habitat Degradation                     | Rural NPS               |
| Pike Creek Ditch          | 2813        | Butler                | Habitat Degradation                     | Rural NPS               |
| Pike Creek, Ditch to      | 2819        | Butler                | Habitat Degradation                     | Rural NPS               |
| Pike Slough               | 2817        | Butler                | Habitat Degradation                     | Rural NPS               |
| Pilot Grove Creek         | 0439        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Pin Oak Creek             | 0926        | Johnson               | Habitat Degradation                     | Rural NPS               |
| Platte River              | 0312        | Platte                | Habitat Degradation,<br>Atrazine        | Rural NPS               |
| Platte River, Old Channel | 0325        | Buchanan              | Habitat Degradation                     | Rural NPS               |
| Platte River, Old Channel | 0332        | Buchanan              | Habitat Degradation                     | Rural NPS               |
| Platte River, Old Channel | 0341        | Buchanan              | Habitat Degradation                     | Rural NPS               |

|                                |             |                       |   |                              |
|--------------------------------|-------------|-----------------------|---|------------------------------|
| Platte River, Old Channel      | 0326        | Buchanan              | Habitat Degradation                     | Rural NPS                    |
| <b>Name</b>                    | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>      |
| Platte River, Old Channel      | 0348        | Buchanan              | Habitat Degradation                     | Rural NPS                    |
| Plattin Creek                  | 1728        | Jefferson             | Dissolved Oxygen                        | Wastewater Discharge         |
| Pleasant Run Creek             | 1327        | Vernon                | Habitat Degradation                     | Rural NPS                    |
| Pointers Creek                 | 1460        | Osage                 | Habitat Degradation                     | Rural NPS                    |
| Polecat Creek                  | 0445        | Harrison              | Habitat Degradation                     | Rural NPS                    |
| Pond Creek, Tributary          | 2128        | Washington            | Sediment                                | Abandoned Barite Mined Lands |
| Poney Creek                    | 3312        | Cass                  | Habitat Degradation                     | Rural NPS                    |
| Poney Creek                    | 3313        | Cass                  | Habitat Degradation                     | Rural NPS                    |
| Postoak Creek                  | 0928        | Johnson               | Habitat Degradation                     | Rural NPS                    |
| Prairie Creek                  | 0313        | Platte                | Habitat Degradation                     | Rural NPS                    |
| Prairie Creek, Tributary       | 0314        | Platte                | Habitat Degradation                     | Rural NPS                    |
| Pryor Creek                    | 3655        | Vernon                | Habitat Degradation                     | Rural NPS                    |
| Puzzle Creek                   | 0666        | Chariton              | Habitat Degradation                     | Rural NPS                    |
| Raccoon Creek                  | 0586        | Grundy                | Habitat Degradation                     | Rural NPS                    |
| Racoon Creek, Tributary        | 0587        | Grundy                | Habitat Degradation                     | Rural NPS                    |
| Ramsey Branch                  | 2194        | Cape Girardeau        | Habitat Degradation                     | Rural NPS                    |
| Ramsey Creek                   | 0020        | Pike                  | Habitat Degradation                     | Rural NPS                    |
| Ramsey Creek Diversion Channel | 2343        | Scott                 | Habitat Degradation                     | Rural NPS                    |
| Rattlesnake Creek              | 0520        | Livingston            | Habitat Degradation                     | Rural NPS                    |
| Reed Creek                     | 3654        | Vernon                | Habitat Degradation                     | Rural NPS                    |
| Reese Fork                     | 0136        | Monroe                | Habitat Degradation                     | Rural NPS                    |
| Reid Creek                     | 1236        | St. Clair             | Habitat Degradation                     | Rural NPS                    |
| Ricky Creek                    | 1237        | St. Clair             | Habitat Degradation                     | Rural NPS                    |
| Riggin Branch                  | 0347        | Andrew                | Habitat Degradation                     | Rural NPS                    |
| Rinquelin Trail Lake           | 7204        | Maries                | Mercury                                 | Atmospheric Deposition       |
| Roach Lake                     | 0627        | Livingston            | Habitat Degradation                     | Rural NPS                    |
| Roberts Branch                 | 0355        | Clinton               | Habitat Degradation                     | Rural NPS                    |
| Robinson Branch                | 3638        | Vernon                | Habitat Degradation                     | Rural NPS                    |
| Robinson Creek                 | 3558        | Phelps                | Habitat Degradation                     | Wastewater Discharge         |
| Rock Creek                     | 0078        | Knox                  | Habitat Degradation                     | Rural NPS                    |
| Rock Creek                     | 0236        | Atchison              | Habitat Degradation                     | Rural NPS                    |
| Rock Creek                     | 0237        | Atchison              | Habitat Degradation                     | Rural NPS                    |
| Rock Creek                     | 3323        | Clay                  | Habitat Degradation                     | Rural NPS                    |

|                              |             |                       |   |                         |
|------------------------------|-------------|-----------------------|---|-------------------------|
| Rocky Fork                   | 0378        | Ray                   | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>                  | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Rocky Fork                   | 1014        | Boone                 | Sediment                                | Abandoned Mine Lands    |
| Rocky Hollow                 | 3639        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Rollins Creek                | 0382        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Roubidoux Creek              | 1512        | Pulaski               | Low Dissolved Oxygen                    | Unknown                 |
| Rush Creek                   | 3322        | Clay                  | Habitat Degradation                     | Rural NPS               |
| Sac River                    | 1398        | Greene                | Bacteria                                | Unknown                 |
| Sals Creek                   | 2345        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Sals Creek Diversion Channel | 2344        | Scott                 | Habitat Degradation                     | Rural NPS               |
| Salt Branch                  | 0413        | Saline                | Habitat Degradation                     | Rural NPS               |
| Salt Branch                  | 0901        | Saline                | Habitat Degradation                     | Rural NPS               |
| Salt Creek                   | 0594        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Salt Creek                   | 1228        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Salt Creek, Tributary        | 1229        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Salt Fork                    | 0893        | Saline                | Habitat Degradation                     | Rural NPS               |
| Salt Fork                    | 0899        | Saline                | Habitat Degradation                     | Rural NPS               |
| Salt Pond Creek              | 0908        | Saline                | Habitat Degradation                     | Rural NPS               |
| Salt Pond Creek              | 0910        | Saline                | Habitat Degradation                     | Rural NPS               |
| Sampson Creek                | 0453        | Daviess               | Habitat Degradation                     | Rural NPS               |
| Sampson Creek                | 0455        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Sand Creek                   | 0290        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| Sand Creek                   | 0644        | Schuyler              | Habitat Degradation                     | Rural NPS               |
| Sand Creek                   | 1290        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Sandy Creek                  | 0029        | Lincoln               | Habitat Degradation                     | Rural NPS               |
| Sandy Creek                  | 0183        | Pike                  | Habitat Degradation                     | Rural NPS               |
| Sandy Creek                  | 0571        | Mercer                | Habitat Degradation                     | Rural NPS               |
| Schuman Park Lake            | 7280        | Phelps                | Mercury                                 | Atmospheric Deposition  |
| Second Creek                 | 0317        | Platte                | Habitat Degradation                     | Rural NPS               |
| Sees Creek                   | 0088        | Marion                | Habitat Degradation                     | Rural NPS               |
| Sees Creek                   | 0089        | Marion                | Habitat Degradation                     | Rural NPS               |
| Shackelford Branch           | 0385        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Shain Creek                  | 0450        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Shankton Creek               | 0621        | Putnam                | Habitat Degradation                     | Rural NPS               |
| Sharpsburg Branch            | 0087        | Marion                | Habitat Degradation                     | Rural NPS               |

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|--|-------------|-----------------------|---|------------------------------|
| Shaver Creek                           | 0862        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| <b>Name</b>                            | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>      |
| Shaver Creek, Tributary                | 3505        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| Shaver Creek, Tributary                | 3506        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| Shaver Creek, Tributary                | 3507        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| Sheep Creek                            | 0530        | Caldwell              | Habitat Degradation                     | Rural NPS                    |
| Shell Branch                           | 0105        | Monroe                | Habitat Degradation                     | Rural NPS                    |
| Shibboleth Creek                       | 2120        | Washington            | Sediment Deposition                     | Abandoned Barite Mined Lands |
| Shipley Slough                         | 2971        | Dunklin               | Habitat Degradation                     | Rural NPS                    |
| Shoal Creek                            | 0396        | Clay                  | Habitat Degradation                     | Rural NPS                    |
| Shoal Creek                            | 0397        | Clay                  | Habitat Degradation                     | Rural NPS                    |
| Shoal Creek                            | 0518        | Caldwell              | Habitat Degradation                     | Rural NPS                    |
| Shoal Creek                            | 0528        | Caldwell              | Habitat Degradation                     | Rural NPS                    |
| Shoal Creek Ditch                      | 0519        | Livingston            | Habitat Degradation                     | Rural NPS                    |
| Shootman Creek                         | 0639        | Carroll               | Habitat Degradation                     | Rural NPS                    |
| Shuteye Creek                          | 0656        | Adair                 | Habitat Degradation                     | Rural NPS                    |
| Silver Creek                           | 0683        | Randolph              | Habitat Degradation                     | Rural NPS                    |
| Simms Creek                            | 1342        | St. Clair             | Habitat Degradation                     | Rural NPS                    |
| Skull Creek                            | 0890        | Cooper                | Habitat Degradation                     | Rural NPS                    |
| Smith Fork                             | 0353        | Clinton               | Habitat Degradation                     | Rural NPS                    |
| Smithville Lake                        | 7077        | Clay                  | Mercury                                 | Atmospheric Deposition       |
| Sni-A-Bar Creek                        | 0401        | Jackson               | Habitat Degradation                     | Rural NPS                    |
| South Big Creek                        | 0506        | Daviess               | Habitat Degradation                     | Rural NPS                    |
| South Brush Creek                      | 0108        | Monroe                | Habitat Degradation                     | Rural NPS                    |
| South Davis Creek                      | 0913        | Lafayette             | Habitat Degradation                     | Rural NPS                    |
| South Deepwater Creek                  | 1219        | Bates                 | Habitat Degradation                     | Rural NPS                    |
| South Fabius River                     | 0071        | Marion                | Habitat Degradation                     | Rural NPS                    |
| South Flat Creek                       | 0869        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| South Flat Creek                       | 3299        | Benton                | Habitat Degradation                     | Rural NPS                    |
| South Flat Creek, Tributary            | 3526        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| South Flat Creek, Tributary            | 3300        | Benton                | Habitat Degradation                     | Rural NPS                    |
| South Fork                             | 0939        | Pettis                | Habitat Degradation                     | Rural NPS                    |
| South Fork Blackwater River            | 0921        | Johnson               | Habitat Degradation                     | Rural NPS                    |
| South Fork Blackwater River            | 0924        | Johnson               | Habitat Degradation                     | Rural NPS                    |
| South Fork Blackwater River, Tributary | 0925        | Johnson               | Habitat Degradation                     | Rural NPS                    |



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|--|-------------|-----------------------|---|---------------------------------|
| South Fork Clear Creek                   | 0293        | Nodaway               | Habitat Degradation                       | Rural NPS                       |
| <b>Name</b>                              | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b>   | <b>Potential Source</b>         |
| South Fork Gees Creek                    | 0591        | Livingston            | Habitat Degradation                       | Rural NPS                       |
| South Fork Middle Fabius River           | 0067        | Scotland              | Habitat Degradation                       | Rural NPS                       |
| South Fork Middle Fabius River           | 0068        | Schuyler              | Habitat Degradation                       | Rural NPS                       |
| South Fork North Fabius River            | 0060        | Schuyler              | Habitat Degradation                       | Rural NPS                       |
| South Fork North Fabius River, Tributary | 0061        | Schuyler              | Habitat Degradation                       | Rural NPS                       |
| South Fork North River                   | 0085        | Marion                | Habitat Degradation                       | Rural NPS                       |
| South Fork North River                   | 0086        | Marion                | Habitat Degradation                       | Rural NPS                       |
| South Fork Salt River                    | 0141        | Monroe                | Habitat Degradation, Low Dissolved Oxygen | Rural NPS, Wastewater Discharge |
| South Fork Salt River, Tributary         | 0146        | Audrain               | Habitat Degradation                       | Rural NPS                       |
| South Fork South Fabius River            | 0076        | Knox                  | Habitat Degradation                       | Rural NPS                       |
| South Fork South Fabius River            | 0077        | Knox                  | Habitat Degradation                       | Rural NPS                       |
| South Fork South Grand River             | 1269        | Cass                  | Habitat Degradation                       | Rural NPS                       |
| South Fork, Tributary                    | 3547        | Pettis                | Habitat Degradation                       | Rural NPS                       |
| South Grand River                        | 1249        | Cass                  | Habitat Degradation                       | Rural NPS                       |
| South Mud Creek                          | 0542        | Ray                   | Habitat Degradation                       | Rural NPS                       |
| South River                              | 0003        | Marion                | Habitat Degradation                       | Rural NPS                       |
| South Wyaconda River                     | 0050        | Clark                 | Atrazine                                  | Rural NPS                       |
| Sparrow Foot Creek                       | 1212        | Henry                 | Habitat Degradation                       | Rural NPS                       |
| Spencer Creek                            | 0224        | St. Charles           | Habitat Degradation                       | Rural NPS                       |
| Spillway Ditch                           | 3134        | New Madrid            | Habitat Degradation                       | Rural NPS                       |
| Spring Creek                             | 0657        | Adair                 | Habitat Degradation                       | Rural NPS                       |
| Spring Creek                             | 2979        | Stoddard              | Habitat Degradation                       | Rural NPS                       |
| Spring Fork                              | 0871        | Pettis                | Habitat Degradation                       | Rural NPS                       |
| Spring Fork                              | 3513        | Pettis                | Habitat Degradation                       | Rural NPS                       |
| Spring Fork, Tributary                   | 0872        | Pettis                | Habitat Degradation                       | Rural NPS                       |
| Spring Fork, Tributary                   | 3515        | Pettis                | Habitat Degradation                       | Rural NPS                       |
| Squaw Creek                              | 0252        | Holt                  | Habitat Degradation                       | Rural NPS                       |
| St. Francis River                        | 2968        | Dunklin               | Habitat Degradation                       | Rural NPS                       |
| St. James Bayou                          | 3132        | Mississippi           | Habitat Degradation                       | Rural NPS                       |
| St. James Ditch                          | 3133        | New Madrid            | Habitat Degradation                       | Rural NPS                       |
| St. John's Bayou                         | 3123        | New Madrid            | Habitat Degradation                       | Rural NPS                       |

|                             |             |                       |   |                         |
|-----------------------------|-------------|-----------------------|---|-------------------------|
| St. John's Ditch            | 3138        | New Madrid            | Mercury                                 | Atmospheric Deposition  |
| <b>Name</b>                 | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| St. John's Ditch            | 3150        | Scott                 | Habitat Degradation                     | Rural NPS               |
| St. John's Diversion Ditch  | 3125        | New Madrid            | Habitat Degradation                     | Rural NPS               |
| St. John's Diversion Ditch  | 3127        | Mississippi           | Habitat Degradation                     | Rural NPS               |
| Stanley Creek               | 3001        | Wayne                 | Habitat Degradation                     | Rural NPS               |
| Sterett Creek               | 1204        | Benton                | Habitat Degradation                     | Rural NPS               |
| Stillcamp Ditch             | 2810        | Butler                | Habitat Degradation                     | Rural NPS               |
| Stillhouse Branch           | 0489        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Stinking Creek              | 0700        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Strother Creek              | 2751        | Iron                  | Lead, Zinc                              | Active Lead-Zinc Mine   |
| Sugar Creek                 | 0043        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0044        | Clark                 | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0054        | Lewis                 | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0156        | Lincoln               | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0270        | Platte                | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0271        | Buchanan              | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0581        | Grundy                | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0582        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 0641        | Adair                 | Habitat Degradation                     | Rural NPS               |
| Sugar Creek                 | 1261        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Sweet Spring Creek          | 0685        | Randolph              | Habitat Degradation                     | Rural NPS               |
| Sweezer Creek               | 0699        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Swift Ditch                 | 3151        | New Madrid            | Mercury                                 | Atmospheric Deposition  |
| Tabo Creek                  | 0405        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| Tabo Creek                  | 0406        | Lafayette             | Habitat Degradation                     | Rural NPS               |
| Tarkio River                | 0242        | Atchison              | Habitat Degradation                     | Rural NPS               |
| Tater Hill Creek            | 0636        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Tater Hill Creek, Tributary | 0637        | Carroll               | Habitat Degradation                     | Rural NPS               |
| Tebo Creek                  | 1280        | Henry                 | Low Dissolved Oxygen                    | Rural NPS               |
| Tebo Creek                  | 1281        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Teeter Creek                | 2551        | Douglas               | Habitat Degradation                     | Rural NPS               |
| Tenmile Pond                | 3130        | Mississippi           | Habitat Degradation                     | Rural NPS               |
| Tennessee Creek             | 1263        | Cass                  | Habitat Degradation                     | Rural NPS               |
| Thief Creek                 | 0646        | Schuyler              | Habitat Degradation                     | Rural NPS               |
| Third Fork Platte River     | 0327        | Dekalb                | Habitat Degradation                     | Rural NPS               |

|                             |             |                       |   |                                 |
|-----------------------------|-------------|-----------------------|---|---------------------------------|
| Thompson Branch             | 0458        | Gentry                | Habitat Degradation                     | Rural NPS                       |
| <b>Name</b>                 | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>         |
| Thompson Creek              | 0437        | Daviess               | Habitat Degradation                     | Rural NPS                       |
| Thompson River, Old Channel | 0568        | Grundy                | Habitat Degradation                     | Rural NPS                       |
| Thompson River, Old Channel | 0569        | Grundy                | Habitat Degradation                     | Rural NPS                       |
| Thompson River, Old Channel | 0579        | Grundy                | Habitat Degradation                     | Rural NPS                       |
| Thompson River, Old Channel | 0580        | Grundy                | Habitat Degradation                     | Rural NPS                       |
| Thompson River, Old Channel | 0592        | Livingston            | Habitat Degradation                     | Rural NPS                       |
| Tiger Fork                  | 0082        | Shelby                | Habitat Degradation                     | Rural NPS                       |
| Tobin Creek                 | 0064        | Scotland              | Habitat Degradation                     | Rural NPS                       |
| Todd Creek                  | 0316        | Platte                | Habitat Degradation                     | Rural NPS                       |
| Tombstone Creek             | 0584        | Harrison              | Habitat Degradation                     | Rural NPS                       |
| Tombstone Creek             | 0585        | Harrison              | Habitat Degradation                     | Rural NPS                       |
| Townsend Slough             | 3675        | Vernon                | Habitat Degradation                     | Rural NPS                       |
| Towstring Creek             | 0631        | Livingston            | Habitat Degradation                     | Rural NPS                       |
| Trail Creek                 | 0577        | Harrison              | Habitat Degradation                     | Rural NPS                       |
| Trail Creek                 | 0578        | Harrison              | Habitat Degradation                     | Rural NPS                       |
| Troublesome Cr.             | 0074        | Lewis                 | Habitat Degradation                     | Rural NPS                       |
| Tub Creek                   | 0534        | Caldwell              | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0138        | Monroe                | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0361        | Carroll               | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0362        | Carroll               | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0486        | Gentry                | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0523        | Caldwell              | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0605        | Linn                  | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0647        | Putnam                | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0663        | Macon                 | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 0854        | Pettis                | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek                | 3217        | Jasper                | Lead, Zinc, Cadmium in sediments        | Abandoned Lead-Zinc Mined Lands |
| Turkey Creek, Tributary     | 3487        | Pettis                | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek, Tributary     | 0524        | Caldwell              | Habitat Degradation                     | Rural NPS                       |
| Turkey Creek, Tributary     | 0664        | Macon                 | Habitat Degradation                     | Rural NPS                       |
| Twomile Creek               | 1313        | Vernon                | Habitat Degradation                     | Rural NPS                       |
| Van Meter Ditch             | 0412        | Saline                | Habitat Degradation                     | Rural NPS                       |

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|----------------------------------|-------------|-----------------------|---|---------------------------------|
| Varney River Ditch               | 2969        | Dunklin               | Habitat Degradation                     | Rural NPS                       |
| <b>Name</b>                      | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b>         |
| Varney River Ditch               | 2970        | Dunklin               | Habitat Degradation                     | Rural NPS                       |
| Village Creek                    | 2864        | Madison               | Lead, Zinc in sediments                 | Abandoned Lead-Zinc Mined Lands |
| Wades Creek                      | 1291        | Henry                 | Habitat Degradation                     | Rural NPS                       |
| Wakenda Creek                    | 0360        | Carroll               | Habitat Degradation                     | Rural NPS                       |
| Wakenda Creek                    | 0364        | Carroll               | Habitat Degradation                     | Rural NPS                       |
| Wakenda Creek, Old Channel       | 0368        | Carroll               | Habitat Degradation                     | Rural NPS                       |
| Wakonda Lake                     | 7002        | Lewis                 | Lead (in fish)                          | Unknown                         |
| Walnut Creek                     | 0661        | Adair                 | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 0687        | Randolph              | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 0873        | Pettis                | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 0918        | Johnson               | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 0937        | Johnson               | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 1306        | Bates                 | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 3512        | Pettis                | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 3521        | Pettis                | Habitat Degradation                     | Rural NPS                       |
| Walnut Creek                     | 3634        | Vernon                | Habitat Degradation                     | Rural NPS                       |
| Walnut Fork                      | 0487        | Gentry                | Habitat Degradation                     | Rural NPS                       |
| Wamsley Creek                    | 0505        | Dekalb                | Habitat Degradation                     | Rural NPS                       |
| Weatherby Lake                   | 7071        | Platte                | Mercury                                 | Atmospheric Deposition          |
| Weldon Branch                    | 0459        | Gentry                | Habitat Degradation                     | Rural NPS                       |
| Weldon River, Old Channel        | 0561        | Grundy                | Habitat Degradation                     | Rural NPS                       |
| Wellson Slough                   | 3573        | Platte                | Habitat Degradation                     | Rural NPS                       |
| Wellson Slough                   | 3574        | Platte                | Habitat Degradation                     | Rural NPS                       |
| West Branch                      | 1318        | Barton                | Habitat Degradation                     | Rural NPS                       |
| West Branch Crawford Creek       | 1256        | Jackson               | Habitat Degradation                     | Rural NPS                       |
| West Cow Creek                   | 0897        | Saline                | Habitat Degradation                     | Rural NPS                       |
| West Ditch                       | 3111        | Dunklin               | Habitat Degradation                     | Rural NPS                       |
| West Fork                        | 3198        | Barton                | Habitat Degradation                     | Rural NPS                       |
| West Fork Bee Branch             | 0668        | Chariton              | Habitat Degradation                     | Rural NPS                       |
| West Fork Big Creek              | 0451        | Harrison              | Habitat Degradation                     | Rural NPS                       |
| West Fork Clear Creek            | 1335        | Vernon                | Habitat Degradation                     | Rural NPS                       |
| West Fork Clear Creek, Tributary | 3641        | Vernon                | Habitat Degradation                     | Rural NPS                       |
| West Fork Crooked River          | 0379        | Ray                   | Habitat Degradation                     | Rural NPS                       |
| West Fork Crooked River          | 0380        | Ray                   | Habitat Degradation                     | Rural NPS                       |

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|------------------------------------|-------------|-----------------------|---|-------------------------|
| West Fork Cuivre River             | 0185        | Audrain               | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>                        | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| West Fork East Creek               | 3310        | Cass                  | Habitat Degradation                     | Rural NPS               |
| West Fork Finney Creek             | 0905        | Saline                | Habitat Degradation                     | Rural NPS               |
| West Fork Finney Creek, Tributary  | 0906        | Saline                | Habitat Degradation                     | Rural NPS               |
| West Fork Honey Creek              | 0556        | Mercer                | Habitat Degradation                     | Rural NPS               |
| West Fork Locust Creek             | 0613        | Sullivan              | Altered Aquatic Community               | Rural NPS               |
| West Fork Lost Creek               | 0499        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| West Fork Lost Creek, Tributary    | 0501        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| West Fork Lost Creek, Tributary    | 0500        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| West Fork Postoak Creek            | 0929        | Johnson               | Habitat Degradation                     | Rural NPS               |
| West Fork Postoak Creek, Tributary | 0930        | Johnson               | Habitat Degradation                     | Rural NPS               |
| West Fork Wakenda Creek            | 0366        | Carroll               | Habitat Degradation                     | Rural NPS               |
| West Fork Wakenda Creek            | 0367        | Ray                   | Habitat Degradation                     | Rural NPS               |
| West High Creek                    | 0230        | Atchison              | Habitat Degradation                     | Rural NPS               |
| West Lick Creek                    | 0149        | Monroe                | Habitat Degradation                     | Rural NPS               |
| West Locust Creek                  | 0611        | Putnam                | Habitat Degradation                     | Rural NPS               |
| West Muddy Creek                   | 0564        | Grundy                | Habitat Degradation                     | Rural NPS               |
| West Muddy Creek                   | 0566        | Mercer                | Habitat Degradation                     | Rural NPS               |
| West Muddy Creek, Tributary        | 0565        | Mercer                | Habitat Degradation                     | Rural NPS               |
| West Tarkio Creek                  | 0244        | Atchison              | Habitat Degradation                     | Rural NPS               |
| West Tarkio Creek                  | 0246        | Atchison              | Habitat Degradation                     | Rural NPS               |
| West Yellow Creek                  | 0599        | Linn                  | Habitat Degradation                     | Rural NPS               |
| West Yellow Creek                  | 0600        | Sullivan              | Habitat Degradation                     | Rural NPS               |
| Wheeler Creek                      | 0503        | Dekalb                | Habitat Degradation                     | Rural NPS               |
| White Branch                       | 1330        | Vernon                | Habitat Degradation                     | Rural NPS               |
| White Cloud Creek                  | 0345        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| White Cloud Creek                  | 0346        | Nodaway               | Habitat Degradation                     | Rural NPS               |
| White Oak Creek                    | 0454        | Harrison              | Habitat Degradation                     | Rural NPS               |
| White Oak Creek                    | 1279        | Henry                 | Habitat Degradation                     | Rural NPS               |
| Wildcat Creek                      | 0259        | Holt                  | Habitat Degradation                     | Rural NPS               |
| Wildcat Creek                      | 0480        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Wildcat Creek                      | 0482        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Wildcat Creek, Tributary           | 0481        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Wildcat Creek, Tributary           | 0484        | Nodaway               | Habitat Degradation                     | Rural NPS               |

|                         |             |                       |   |                         |
|-------------------------|-------------|-----------------------|---|-------------------------|
| Wilkerson Ditch         | 3126        | Mississippi           | Habitat Degradation                     | Rural NPS               |
| <b>Name</b>             | <b>WBID</b> | <b>Primary County</b> | <b>Potential Pollutant or Condition</b> | <b>Potential Source</b> |
| Williams Creek          | 0387        | Clay                  | Altered Aquatic Community               | Rural NPS               |
| Willow Creek            | 0381        | Ray                   | Habitat Degradation                     | Rural NPS               |
| Willow Creek            | 0498        | Gentry                | Habitat Degradation                     | Rural NPS               |
| Willow Creek            | 0543        | Caldwell              | Habitat Degradation                     | Rural NPS               |
| Willow Creek            | 3653        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Wilson Branch           | 3640        | Vernon                | Habitat Degradation                     | Rural NPS               |
| Winnegan Creek          | 0598        | Linn                  | Habitat Degradation                     | Rural NPS               |
| Winn's Creek            | 0122        | Macon                 | Habitat Degradation                     | Rural NPS               |
| Wolf Hole Lateral       | 3136        | Mississippi           | Habitat Degradation                     | Rural NPS               |
| Wyaconda River          | 0047        | Lewis                 | Habitat Degradation                     | Rural NPS               |
| Yellow Creek            | 0595        | Chariton              | Habitat Degradation                     | Rural NPS               |
| Yellow Creek            | 1230        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Yellow Creek, Tributary | 1231        | St. Clair             | Habitat Degradation                     | Rural NPS               |
| Youngs Creek            | 0140        | Audrain               | Habitat Degradation                     | Rural NPS               |
| Zadie Creek             | 0448        | Harrison              | Habitat Degradation                     | Rural NPS               |
| Zounds Branch           | 0479        | Gentry                | Habitat Degradation                     | Rural NPS               |

## Appendix II

### Total Maximum Daily Load Completion Schedule

Table 18. Tentative Schedule for the Completion of Total Maximum Daily Load Studies.

| <b>WBID</b> | <b>Name</b>            | <b>TMDL Goal Year</b> | <b>Pollutant<sup>1</sup></b> | <b>Source<sup>2</sup></b> | <b>Downstream County</b> | <b>Upstream County</b> | <b>Downstream Legal Description</b> | <b>Upstream Legal Description</b> |
|-------------|------------------------|-----------------------|------------------------------|---------------------------|--------------------------|------------------------|-------------------------------------|-----------------------------------|
| 2074*       | Big River              | 2007                  | Lead                         | Old Lead Belt AML         | Jefferson                |                        | NW18,43N,4E                         | 3166,40N,3E                       |
| 2080*       | Big River              | 2007                  | Lead, NVSS                   | Old Lead Belt AML         | Jefferson                | St. Francois           | 3166,40N,3E                         | 33,37N,4E                         |
| 1371        | Brush Creek            | 2007                  | BOD, VSS                     | Humansville WWTP          | Polk                     |                        | SW16,35N,24W                        | SW16,35N,24W                      |
| 0709        | Bynum Creek            | 2007                  | NVSS                         | Auxvasse Stone Quarry     | Callaway                 |                        | S34,49N,9W                          | S34,49N,9W                        |
| 3239        | Clear Creek            | 2007                  | Nutrients                    | Monett WWTP               | Barry                    |                        |                                     |                                   |
| 0510*       | Dog Creek              | 2007                  | NVSS                         | Traeger Quarry            | Daviess                  |                        | NW13,58N,28W                        | NW13,58N,28W                      |
| 7237        | Fellows Lake           | 2007                  | Nutrients                    | Agricultural/Suburban NPS | Greene                   |                        | NE22,30N,21W                        |                                   |
| 2168*       | Flat River Creek       | 2007                  | Lead, NVSS                   | Old Lead Belt AML         | St. Francois             |                        | Sur.83,37,5E                        | NW18,36,5E                        |
| 2168*       | Flat River Creek       | 2007                  | Zinc                         | Elvins tailings pile      | St. Francois             |                        | Sur.83,37,5E                        | NW18,36,5E                        |
| 0037        | Fox River              | 2007                  | Manganese                    | Natural                   | Clark                    |                        | 6,63N,5W                            | SE6,64N,6W                        |
| 0883*       | Gabriel Creek          | 2007                  | BOD, NFR                     | 2 Stover lagoons          | Morgan                   |                        | SE34,43N,19W                        | NE3,42N,19W                       |
| 1007        | Hinkson Creek          | 2007                  | Unknown                      |                           | Boone                    |                        | mouth                               | W24,48N,13W                       |
| 1008        | Hinkson Creek          | 2007                  | Unknown                      |                           | Boone                    |                        | W24,48N,13W                         | SW8,48N,12W                       |
| 7207        | HS Truman Lake         | 2007                  | Manganese                    | Natural                   | Henry                    |                        | 7,40N,23W                           |                                   |
| 0420        | Indian Creek           | 2007                  | Fecal coliform               | WWTP in Kansas            | Jackson                  |                        | mouth                               | state line                        |
| 1438        | Little Lindley Creek   | 2007                  | BOD, VSS                     | Buffalo WWTP              | Dallas                   |                        | NE16,34N,20W                        | W15,34N,20W                       |
| 7023        | LaBelle No.2 Lake      | 2007                  | Atrazine, Cyana              | Corn/Sorghum Production   | Lewis                    |                        | NE16,61N,9W                         |                                   |
| 7314        | Lake Taneycomo         | 2007                  | Low DO                       | Table Rock Dam            | Taney                    |                        | NE8,23N,20W                         |                                   |
| 0063        | Middle Fabius River    | 2007                  | Manganese                    | Natural                   | Lewis                    |                        | NE29,60N,6W                         | 22,64N,12W                        |
| 2786        | McKenzie Creek         | 2007                  | BOD                          | Piedmont WWTP             | Wayne                    |                        | mouth                               | SE34,29N,3E                       |
| 1707        | Mississippi River      | 2007                  | Lead, Zinc                   | Herculaneum Smelter       | Jefferson                |                        | Selma,Mo.                           | Herculaneum                       |
| 7031        | Monroe City Rte.J Lake | 2007                  | Atrazine, Cyana              | Corn/Sorghum Production   | Ralls                    |                        | NE34,56N,7W                         |                                   |
| 0056        | North Fabius River     | 2007                  | Manganese                    | AgNPS                     | Marion                   | Schuyler               | 24,59N,6W                           | 26,67N,14W                        |
| 1444*       | Piper Creek            | 2007                  | VSS                          | Bolivar WWTP              | Polk                     |                        | 6,33N,22W                           | 6,33N,22W                         |
| 2128        | Pond Creek, Tributary  | 2007                  | NVSS                         | Barite Tailings Pond      | Washington               |                        | SW35,38N,3E                         | E3,37N,3E                         |
| 0050        | South Wyaconda River   | 2007                  | Manganese                    | Natural                   | Clark                    | Scotland               | 26,65N,9.W                          | 4,65N,10W                         |

| <b>WBID</b> | <b>Waterbody</b>        | <b>TMDL<br/>Goal<br/>Year</b> | <b>Pollutant<sup>1</sup></b> | <b>Source<sup>2</sup></b>        | <b>Downstream<br/>County</b> | <b>Upstream<br/>County</b> | <b>Downstream<br/>Legal<br/>Description</b> | <b>Upstream<br/>Legal<br/>Description</b> |
|-------------|-------------------------|-------------------------------|------------------------------|----------------------------------|------------------------------|----------------------------|---|---|
| 0091        | Salt River              | 2007                          | Manganese                    | Cannon Dam                       | Ralls                        |                            | SE23,55N,3W                                 | NE9,55N,6W                                |
| 0103        | Salt River              | 2007                          | Manganese,Iron               | Cannon Dam                       | Ralls                        |                            | NE9,55N,6W                                  | NE26,55N,7W                               |
| 2120        | Shibboleth Creek        | 2007                          | NVSS                         | Barite Tailings Pond             | Washington                   |                            | NW22,38N,3E                                 | NE21,38N,3E                               |
| 0073        | Troublesome Creek       | 2007                          | Manganese                    | Natural                          | Marion                       |                            | NE24,59N,7W                                 | 15,59N,7W                                 |
| 7032        | Vandalia City Reservoir | 2007                          | Atrazine                     | Corn/Sorghum<br>Production       | Pike                         |                            | SE12,53N,5W                                 |   |
| 0046        | Wyaconda River          | 2007                          | Manganese                    | Natural                          | Lewis                        |                            | mouth                                       | 15,61N,6W                                 |
| 3118*       | Buffalo Ditch           | 2008                          | BOD                          | Kennett WWTP                     | Dunklin                      |                            | NE26,18N,9E                                 | C14,18N,9E                                |
| 9002        | Cave Spring Branch      | 2008                          | Nutrients                    | Simmons Industries,<br>Livestock | McDonald                     |                            | W21,21N,34W                                 | W21,21N,34W                               |
| 1145*       | Dry Auglaize Creek      | 2008                          | Unknown                      | Lebanon WWTP                     | Laclede                      |                            | SE36,35N,16W                                | E2,34N,16W                                |
| 7026        | Edina Reservoir         | 2008                          | Atrazine, Cyana              | Corn/Sorghum<br>Production       | Knox                         |                            | NE12,62N,12W                                |   |
| 0212        | Indian Camp Creek       | 2008                          | NVSS, NH3                    | JZ Landfill                      | Warren                       |                            | 10,47N,1W                                   | 10,47N,1W                                 |
| 1946        | Indian Creek            | 2008                          | Zinc                         |                                  | Washington                   |                            | mouth                                       | 18,35N,1W                                 |
| 7205        | Lake of the Ozarks      | 2008                          | Fish Trauma                  | Truman Dam                       | Benton                       |                            | NE7,40N,22W                                 |   |
| 7205        | Lake of the Ozarks      | 2008                          | Gas supersaturation          | Truman Dam                       | Benton                       |                            | NE7,40N,22W                                 |   |
| 7205        | Lake of the Ozarks      | 2008                          | Low DO                       | Truman Dam                       | Benton                       |                            | NE7,40N,22W                                 |   |
| 7055        | Lake Ste. Louise        | 2008                          | Fecal Coliform               | Urban Runoff                     | St. Charles                  |                            | 28,47N,2E                                   |   |
| 1300*       | Mound Branch            | 2008                          | BOD, NH3N                    | Butler WWTP                      | Bates                        |                            | N5,39N,31W                                  | C34,40N,31W                               |
| 1870*       | Spring Branch           | 2008                          | BOD, VSS                     | Salem WWTP                       | Dent                         |                            | SW12,34N,6W                                 | SE12,34N,6W                               |
| 0710*       | Stinson Creek           | 2008                          | BOD,VSS                      | Fulton WWTP                      | Callaway                     |                            | NE21,47N,9W                                 | NE21,47N,9W                               |
| 2755        | West Fork Black River   | 2008                          | Nutrients                    | Doe Run West Fork Mine           | Reynolds                     |                            | SE1,32N,2W                                  | SE1,32N,2W                                |
| 1746        | Big Bottom Creek        | 2009                          | BOD,VSS                      | Lake Forest Subdivision          | Ste. Genevieve               |                            | NE36,38N,7E                                 | SE36,38N,7E                               |
| 0912        | Davis Creek             | 2009                          | Nutrients                    | Odessa SE WWTP                   | Lafayette                    |                            | SE10,48N,27W                                | N9,48N,27W                                |
| 0189        | Elkhorn Creek           | 2009                          | Sediment                     | Agricultural NPS                 | Montgomery                   |                            | 23,50N,4W                                   | 3,48N,5W                                  |
| 3652        | Little Osage River      | 2009                          | Low DO                       |                                  | Vernon                       |                            | 18,37N,31W                                  | 18,37N,33W                                |
| 0875        | Lake Creek              | 2009                          | Sediment                     | Agricultural NPS                 | Pettis                       |                            | SW25,45N,20W                                | NE12,44N,20W                              |
| 3105        | Lateral.#2 Main Ditch   | 2009                          | Sediment                     | Agricultural NPS                 | Stoddard                     |                            | 24,23N,10E                                  | 25,25N,10E                                |
| 1308        | Marmaton River          | 2009                          | Low DO                       |                                  | Vernon                       |                            | 19,38N,29W                                  | W6,35N,33W                                |
| 0159        | Mill Creek              | 2009                          | Sediment                     | Agricultural NPS                 | Lincoln                      |                            | 7,50N,1W                                    | 1710,51N,1W                               |
| 2373*       | Pearson Creek           | 2009                          | Unknown toxicity             | Urban NPS                        | Greene                       |                            | SE35,29N,21W                                | C26,29N,21W                               |
| 0218        | Peruque Creek           | 2009                          | NVSS                         | Urban/Rural NPS                  | St. Charles                  |                            | SE25,47,1E                                  | SE23,47,1W                                |
| 0612        | West Fork Locust Creek  | 2009                          | Unknown                      |                                  | Linn                         | Sullivan                   | 2,59N,21W                                   | 36,62N,21W                                |



| <b>WBID</b> | <b>Waterbody</b>             | <b>TMDL<br/>Goal<br/>Year</b> | <b>Pollutant<sup>1</sup></b> | <b>Source<sup>2</sup></b> | <b>Downstream<br/>County</b> | <b>Upstream<br/>County</b> | <b>Downstream<br/>Legal<br/>Description</b> | <b>Upstream<br/>Legal<br/>Description</b> |
|-------------|------------------------------|-------------------------------|------------------------------|---------------------------|------------------------------|----------------------------|---|---|
| 0613        | West Fork Locust Creek       | 2009                          | Unknown                      |                           | Sullivan                     |                            | 36,62N,21W                                  | 33,64N,21W                                |
| 7313        | Table Rock Lake              | 2010                          | Nutrients                    | Point/Nonpoint Sources    | Stone                        | Barry                      | NW22,22N,22W                                |   |
| 7453        | Wallace SP Lake              | 2010                          | Fecal Coliform               | Unknown                   | Clinton                      |                            | NE24,56N,30W                                |   |
| 7087        | Watkins Mill Lake            | 2010                          | Fecal Coliform               | Unknown                   | Clay                         |                            | NW22,53N,30W                                |   |
| 0442        | Hickory Creek                | 2011                          | Unknown                      |                           | Daviess                      |                            | mouth                                       | 11,60N,28W                                |
| 0588        | Hickory Creek                | 2011                          | Unknown                      |                           | Grundy                       |                            | mouth                                       | 9,60N,25W                                 |
| 0589        | Hickory Creek,<br>Tributary  | 2011                          | Unknown                      |                           | Grundy                       |                            | 15,60N,25W                                  | 9,60N,25W                                 |
| 0857        | Long Branch                  | 2011                          | Unknown                      |                           | Pettis                       | Johnson                    | 6,45N,23W                                   | 9,45N,24W                                 |
| 0602        | Long Branch                  | 2011                          | Unknown                      |                           | Linn                         |                            | mouth                                       | 11,59N,20W                                |
| 9004        | Sewer Branch                 | 2011                          | Low DO                       | Unknown                   | Pettis                       |                            |   |   |
| 0557        | Muddy Creek                  | 2012                          | Unknown                      |                           | Grundy                       | Mercer                     | mouth                                       | 22,66N,23W                                |
| 0652        | Sandy Creek                  | 2012                          | Unknown                      |                           | Putnam                       |                            | mouth                                       | 19,66N,17W                                |
| 9005        | Willow Branch                | 2012                          | Unknown                      |                           | Putnam                       |                            |   |   |
| 7186        | Ben Branch Lake              | 2015                          | Mercury                      | Atmospheric Deposition    | Osage                        |                            | 14,44N,8W                                   |   |
| 7109        | Bethany Reservoir            | 2015                          | Mercury                      | Atmospheric Deposition    | Harrison                     |                            | SE27,64N,28W                                |   |
| 2769        | Black River                  | 2015                          | Mercury                      | Atmospheric Deposition    | Butler                       | Wayne                      | State Line                                  | 16,25N,6E                                 |
| 7370        | Bluestem Lake                | 2015                          | Mercury                      | Atmospheric Deposition    | Jackson                      |                            | 22,47N,31W                                  |   |
| 2034        | Bourbeuse River              | 2015                          | Mercury                      | Atmospheric Deposition    | Franklin                     | Phelps                     | mouth                                       | 4,39N,6W                                  |
| 7326        | Clearwater Lake              | 2015                          | Mercury                      | Atmospheric Deposition    | Reynolds                     |                            | NE6,28N,3E                                  |   |
| 7090        | Cooley Lake                  | 2015                          | Mercury                      | Atmospheric Deposition    | Clay                         |                            | SE2,51N,30W                                 |   |
| 7135        | Crowder SP Lake              | 2015                          | Mercury                      | Atmospheric Deposition    | Grundy                       |                            | 12,61N,25W                                  |   |
| 7015        | Deer Ridge Community<br>Lake | 2015                          | Mercury                      | Atmospheric Deposition    | Lewis                        |                            | 18,62N,8W                                   |   |
| 3050        | Ditch #1                     | 2015                          | Mercury                      | Atmospheric Deposition    | Scott                        |                            | State Line                                  | 27,29,12E                                 |
| 2593        | Eleven Point River           | 2015                          | Mercury                      | Atmospheric Deposition    | Oregon                       |                            | State Line                                  | 18,24N,2W                                 |
| 7237        | Fellows Lake                 | 2015                          | Mercury                      | Atmospheric Deposition    | Greene                       |                            | NE22,30N,21W                                |   |
| 1605        | Femme Osage Slough           | 2015                          | Mercury                      | Atmospheric Deposition    | St. Charles                  |                            | mouth                                       | 29,45N,2E                                 |
| 7382        | Foxboro Lake                 | 2015                          | Mercury                      | Atmospheric Deposition    | Franklin                     |                            | 14,42N,4W                                   |   |
| 2184        | Grand Glaize Creek           | 2015                          | Mercury                      | Atmospheric Deposition    | St. Louis                    |                            | mouth                                       | 9,42N,5E                                  |
| 7384        | Grindstone Reservoir         | 2015                          | Mercury                      | Atmospheric Deposition    | DeKalb                       |                            | NW8,57N,30W                                 |   |
| 7388        | Hough Park Lake              | 2015                          | Mercury                      | Atmospheric Deposition    | Cole                         |                            | 19,44N,11W                                  |   |
| 7029        | Hunnewell Lake               | 2015                          | Mercury                      | Atmospheric Deposition    | Shelby                       |                            | SW25,57N,9W                                 |   |
| 7288        | Indian Hills Lake            | 2015                          | Mercury                      | Atmospheric Deposition    | Crawford                     |                            | 22,39N,5W                                   |   |

| <b>WBID</b> | <b>Waterbody</b>     | <b>TMDL Goal Year</b> | <b>Pollutant<sup>1</sup></b> | <b>Source<sup>2</sup></b> | <b>Downstream County</b> | <b>Upstream County</b> | <b>Downstream Legal Description</b> | <b>Upstream Legal Description</b> |
|-------------|----------------------|-----------------------|------------------------------|---------------------------|--------------------------|------------------------|-------------------------------------|-----------------------------------|
| 2347        | James River          | 2015                  | Mercury                      | Atmospheric Deposition    | Stone                    |                        | 10,24N,24W                          | 8,26N,22W                         |
| 2362        | James River          | 2015                  | Mercury                      | Atmospheric Deposition    | Stone                    | Greene                 | 8,26N,22W                           | Lake Spfd.                        |
| 7105        | Jamesport City Lake  | 2015                  | Mercury                      | Atmospheric Deposition    | Daviess                  |                        | NE20,60,26                          |                                   |
| 7196        | Knob Noster SP Lakes | 2015                  | Mercury                      | Atmospheric Deposition    | Johnson                  |                        | 29,46N,28W                          |                                   |
| 0423        | Little Blue River    | 2015                  | Mercury                      | Atmospheric Deposition    | Jackson                  |                        | 21,49,31                            | Longview Dam                      |
| 7023        | Labelle Lake #2      | 2015                  | Mercury                      | Atmospheric Deposition    | Lewis                    |                        | NE16,61N,9W                         |                                   |
| 7436        | Lake of the Woods    | 2015                  | Mercury                      | Atmospheric Deposition    | Boone                    |                        | NE2,48N,12W                         |                                   |
| 0847        | Lamine River         | 2015                  | Mercury                      | Atmospheric Deposition    | Cooper                   | Pettis                 | mouth                               | 13,45N,19W                        |
| 7171        | Long Branch Lake     | 2015                  | Mercury                      | Atmospheric Deposition    | Macon                    |                        | NW18,57N,14W                        |                                   |
| 7033        | Mark Twain Lake      | 2015                  | Mercury                      | Atmospheric Deposition    | Ralls                    | Monroe                 | 26,55N,7W                           |                                   |
| 1846        | Meramec River        | 2015                  | Mercury                      | Atmospheric Deposition    | Franklin                 | Crawford               | Meramec SP                          | 22,38N,5W                         |
| 7316        | Noblett Lake         | 2015                  | Mercury                      | Atmospheric Deposition    | Douglass                 |                        | 25,26N,11W                          |                                   |
| 1031        | Osage River          | 2015                  | Mercury                      | Atmospheric Deposition    | Osage                    | Miller                 | mouth                               | Bagnell Dam                       |
| 091         | Salt River           | 2015                  | Mercury                      | Atmospheric Deposition    | Ralls                    |                        | SE23,55N,3W                         | NE9,55N,6W                        |
| 7280        | Schuman Park Lake    | 2015                  | Mercury                      | Atmospheric Deposition    | Phelps                   |                        | 2,37N,8W                            |                                   |
| 7077        | Smithville Lake      | 2015                  | Mercury                      | Atmospheric Deposition    | Clay                     | Clinton                | SW13,53N,33W                        |                                   |
| 3151        | Swift Ditch          | 2015                  | Mercury                      | Atmospheric Deposition    | New Madrid               |                        | 26,23N,14E                          | 2,23N,14E                         |
| 7071        | Weatherby Lake       | 2015                  | Mercury                      | Atmospheric Deposition    | Platte                   |                        | SE15,51,34                          |                                   |
| 7212        | Winnebago Lake       | 2015                  | Mercury                      | Atmospheric Deposition    | Cass                     |                        | 9,46N,31W                           |                                   |
| 9001        | Bear Creek           | 2016                  | Unknown                      | Unknown                   | Adair                    |                        | 22,62N,15W                          | 26,62N,15W                        |
| 0221        | Dardenne Creek       | 2016                  | Unknown                      | Urban/Rural NPS           | St. Charles              |                        | I-70                                | Hwy 40                            |
| 1031*       | Osage River          | 2018                  | Habitat Loss                 | Instream Gravel Dredging  | Cole                     |                        | NE29,43N,11W                        |                                   |
| 1031*       | Osage River          | 2018                  | Habitat Loss                 | Instream Gravel Dredging  | Miller                   |                        | 28,40N,15W                          |                                   |
| 9003        | River des Peres      | 2018                  | Low DO                       | Urban NPS                 | St. Louis                |                        |                                     |                                   |

\*Waterbodies on Memorandum of Understanding between MDNR and EPA.

- 1 NVSS: Non-Volatile Suspended Solids; BOD: Biological Oxygen Demand; VSS: Volatile Suspended Solids; NFR: Nonfilterable Residue; DO: Dissolved Oxygen
- 2 AML: Abandoned Mine Land; WWTP: Wastewater Treatment Plant; NPS: Nonpoint Source